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Athapaskan Linguistics

*Current Perspectives on a
Language Family*

*Eung-Do Cook and
Keren D. Rice (Editors)*

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Introduction

Eung-Do Cook and Keren Rice

The last collection of papers on Athapaskan linguistics was published in 1963 (Hoijer, et. al.). Since that time, there has been considerable research on Athapaskan languages, and, one hopes, much progress made in understanding the structure of the Athapaskan languages. This volume represents an attempt to show the state of the art in Athapaskan linguistics in the mid 1980's. It includes papers in diachronic linguistics, phonology and morphology, areas with long histories of study within the field of Athapaskan linguistics. It also includes papers in syntax, discourse, directionals and ethnolinguistics, areas that have been studied in any depth only much more recently.

In this introduction, we discuss several areas that have been of importance in the field of Athapaskan studies in the past twenty-five years. The discussion is not intended to be exhaustive, either in terms of topics or of literature represented. It is meant to give a flavor of the kind of work being done in the field, and will hopefully interest the reader in pursuing Athapaskan studies further.

Section 1 of this introduction deals with diachronic studies in the Athapaskan languages. The remaining studies take synchronic topics as a focus. Section 2 concerns phonology and morphology, section 3 syntax, and section 4 discourse structure.

1. Diachronic studies

A major focus in Athapaskan studies has been comparative/historical research (Sapir, Li, Hoijer, Krauss, and Leer, among others). In this section we examine two issues that have occupied considerable attention in recent diachronic work. The first of these is the question of genetic subclassification: how are the languages within Athapaskan and within the larger grouping Na-Dene related to one another? This issue is discussed in section 1.1. The second issue is one of reconstruction: what is the structure of Proto-Athapaskan? In this area, questions of both phonology and morphology have been pursued. Some of these questions are discussed in section 1.2.

1.1 Genetic classification

The genetic relationships of the languages within the Athapaskan family and of those within the larger classifications of Athapaskan-Eyak and Na-Dene have been topics of major interest within Athapaskan studies. In this section, the literature on genetic classification both within Athapaskan and at the larger levels is reviewed.

1.1.1 Athapaskan

We begin by discussing genetic relationships within the Athapaskan family itself. Three major subgroups are generally recognized, Northern Athapaskan, Pacific Coast Athapaskan, and Apachean. Krauss & Golla (1981) recognize twenty-three languages in Northern Athapaskan, eight in Pacific Coast Athapaskan, and seven in Apachean, giving a total of thirty-eight distinct languages, not all of which are still spoken. While Pacific Coast Athapaskan and Apachean are each more or less homogeneous, there exists extensive diversity in the phonology and morphology among the Northern Athapaskan languages, even between two very close neighbors (see Kari this volume). Hoijer (1963)

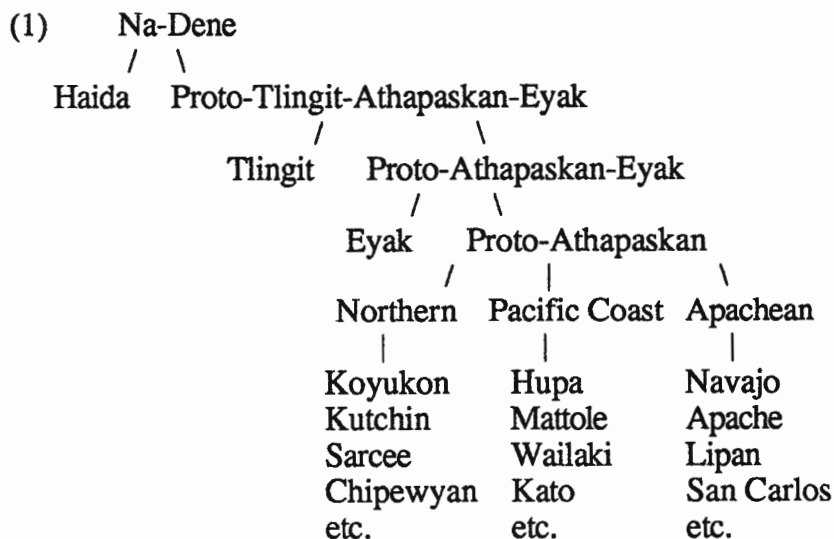
attempted to account for this diversity with a Stammbaum model of genetic subclassification. This attempt to use a family tree model has generally not produced significant results within the Northern subgroup. As demonstrated by Krauss (1973), Hoijer's (1963) taxonomic classification of Athapaskan based on the development of the Proto-Athapaskan (PA) stem-initial consonants has not resulted in meaningful subclassifications. Krauss & Golla's selection of phonological features based on tonogenesis and the pattern of consonantal and vocalic developments from the PA system and of two grammatical features further demonstrates that strict linguistic criteria such as systematic phonetic correspondences and shared innovation do not provide a satisfactory subclassification for Athapaskan, particularly in the northern group. Krauss (1982:74), in a discussion of classification within Northern Athapaskan, concludes that 'Northern Athapaskan is traditionally not a set of discrete languages but rather a cohesive complex, in which neighbors routinely communicate across dialect and language boundaries through the whole area...'.

The problem of determining genetic classification is not unique to Athapaskan, but one frequently encountered in the application of the family tree model. The fact that the family tree model does not yield a unique classification of the Athapaskan languages does not necessarily mean that an extensive comparative analysis based on phonological and grammatical correlations is without value for the study of comparative Athapaskan. While it may not be easy to determine which features are shared innovations, parallel developments, or borrowings, the identification of unusual semantic contrasts and of grammatical features deeply ingrained in the morphological system as well as of systematic phonological developments will pave the way for a more comprehensive and meaningful subclassification, which will eventually yield information at least about interaction between dialects and languages if not about closer genetic affinity.

A major question that one hopes to answer in studying genetic classification is whether all contemporary Athapaskan languages are of the same status genetically, having branched off more or less at the same time from one ancestral language, Proto-Athapaskan (PA), without any well-defined intermediate stage(s). While it is difficult to prove any such stages, it is equally difficult to imagine that the variation within the family stems from one homogeneous parent language. The internal structure of Athapaskan, particularly of the Northern branch, continues to be worthy of study.

1.1.2 *Beyond Athapaskan*

Genetic classifications at a more distant level than Athapaskan have been proposed. Sapir (1915, 1929) introduced Na-Dene¹ as one of the six language phyla of North America. Sapir included in this phylum the Athapaskan languages, Tlingit and Haida. The probable and confirmed genetic relationships based on more recent findings following Sapir's original proposal are summarized in the family tree shown in (1).



Krauss (1964, 1965) presented ample evidence that Eyak, a now extinct isolate, is genetically related to Athapaskan, and proposed Proto-Athapaskan-Eyak (PAE). More recently, Leer (1979) and Krauss & Leer (1981) proposed an intermediate stage, Pre-Proto-Athapaskan (PPA) that is not shown on the tree in (1). PPA falls between the two better known proto-languages, PAE and PA. PPA is suggested based on several phonological processes that occurred between PPA and PA, including palatalization (PPA $*k^w > PA *t\check{s}^w$) and vowel constriction, a process transferring laryngeal features of a consonant to a vowel (PPA $V^? > PA \hat{V}$). The proposed level of PPA raises a number of questions. What is the relationship between PPA and PA? What is the relationship between PAE and PPA: how different is PPA from PAE? What is the phonological status of constricted vowels and other segments that appear to differentiate PPA from PA? Some of these questions will be examined in later sections.

Krauss & Leer (1981) have put forward substantial material indicating a positive genetic affinity of Tlingit to Athapaskan-Eyak, although they are cautious not to pronounce that their 'provisionally' established set of 'correspondences' (p. 150) constitute definite proof of common ancestry. In any event, Tlingit's place in Na-Dene is much more positive than that of Haida. Based on evidence provided primarily by Levine (1979) and Krauss (1979), Krauss & Golla (1981:67) consider Sapir's inclusion of Haida within Na-Dene to be 'untenable.' This view is not shared by all scholars. Pinnow has been tenaciously pursuing Sapir's hypothesis and has recently produced a set of monographs in an effort to provide evidence for Haida's genetic relationship to Na-Dene (Pinnow 1985). Pinnow has probably presented the most extensive and positive arguments one can hope for within the limits of available data and methods. Although Haida may not prove to be a parallel case to Wiyot and Yurok of California (another insightful observation by Sapir (1913),

who saw the genetic affinity of these languages to Algonquian almost a half century before it was actually proven (Haas 1958)), more in-depth understanding of the morpho-semantic systems of the languages concerned in addition to lexical and phonological correspondences is required to demonstrate, if it is indeed demonstratable, a distant relationship (see Goddard 1975).

1.2 Proto-Athapaskan phonology

Krauss' pioneering work on Eyak and other Athapaskan languages in Alaska and the Yukon Territories met with great success in his reconstruction of PA and PAE. For this reason, it is now possible to study contemporary phonological systems from a more coherent panchronic perspective, as demonstrated by Story in her work on Babine and Carrier (1984), as well as Beaver (this volume).

In this section, the sound system of PA is examined first, followed by an exploration of some specific areas of interest within PA phonology, including the sonorant system, vowel constriction, the status of glottalized sonorants, and reduced vowels.

1.2.1 *The PA sound system*

The PA sound system, as proposed by Krauss & Leer (1976, 1981), is summarized in (2).

(2) Proto-Athapaskan Phoneme Inventory

Obstruents (X)						back		glottal
						front	velar	
	alveolar	affricate series			velar	(uvular)		
	(D)	(DL)	(DZ)	(DŽ)	(DŽ ^w)	(ġ)	(ġ)	(H)
Plain								
stops (D)	d	d ^l	d ^z	d ^ž	d ^{ž^w}	ġ	ġ	ʔ

Aspirated

stops (T)	t	tʰ	ts	tʃ	tʃʷ	k̟	q
-----------	---	----	----	----	-----	----	---

Glottalized

stops (T')	t'	tʰ'	ts'	tʃ'	tʃʷ'	k̟'	q'
------------	----	-----	-----	-----	------	-----	----

Voiceless

fricatives (S)		s	ʃ	ʃʷ	x̟	χ	h
----------------	--	---	---	----	----	---	---

Voiced

fricatives (Z)		z	ʒ	ʒʷ	ɣ̟	ɣ	
----------------	--	---	---	----	----	---	--

Sonorants (R) (see Krauss & Leer 1976)

	<u>Front</u>		<u>Back</u>
Oral	y	-	w
Nasal (N)	ỹ	n	ñ

Vowels (V)

Full (V)	i	e [æ]	a [ɔ]	u
----------	---	-------	-------	---

Reduced (v)	ə		ɑ	ʊ
-------------	---	--	---	---

The inventory in (2) includes several major improvements over previous proposed systems for PA. The most significant features of reconstruction by Krauss (and subsequently followed by Leer) include the *k̟ʷ series postulated for PAE², which is now identified as 'labialized palatal'; the *tʃʷ series for PA, a series distinct from the plain palatal series; three reduced vowels; and tonogenesis, or the development of 'constricted vowels'. Krauss proposed that in the tonal Athapaskan languages, the marked tone (high-marked or low-marked) derives from post-nuclear laryngeal features. The additional series of obstruents is well-attested in many languages (e.g. Kutchin, Han, Ingalik) and the concept of marked tone is well established. However, other aspects of the reconstructions for PA remain controversial. Amongst these, the phonemic status of constricted vowels, nasalized vowels,

and nasalized sonorants have not met with unanimous consensus, as reviewed by Cook (1981). Furthermore, there have been changes of symbols due to ongoing revisions, creating confusion and misunderstanding for those who are not directly involved in the reconstruction. Therefore, it is useful to review some major problems of PA phonology as reconstructed by Krauss and his colleagues (e.g. Krauss 1964, Krauss & Leer 1981, Krauss & Golla 1981).

1.2.2 *The sonorant system*

Following the addition of the * k^w -series to the PA(E) phonemic inventory by Krauss, the most interesting segments that Krauss & Leer (1976) proposed first in their manuscripts are * \tilde{y} and * \tilde{w} . These sonorants are discussed by Krauss in his published article (Krauss 1979) and included in the PA phonemic inventory by Leer (1979) and Krauss & Golla (1981).

While the nasalized glides render a symmetry to the sonorant system, the total phonemic inventory reveals two unusual characteristics from a universal point of view: (i) the absence of m and \tilde{n} / η where n is the only true nasal consonant, and (ii) the presence of nasalized nonsyllabic segments in the absence of nasalized vowels. Based on this observation, Cook (1981) proposed that * \tilde{w} and * \tilde{y} be replaced by * m and * \tilde{n} respectively, a position which basically agrees with the revised view of Krauss & Leer (1981).

Krauss & Leer (1981) replace their earlier symbols * \tilde{w} and * \tilde{y} with * m and * η respectively. In addition, they posit two further nasal sonorants, * η_2 and * η^w . The place of * η in the dorso-palatal ('front velar') series is straightforward as it is well preserved in many of the daughter languages (see Krauss and Leer 1981). For example, this nasal phoneme is found in Carrier / \tilde{n} / (see Cook 1985), which is realized as [\tilde{n}] morpheme(syllable)-initially and [η] morpheme (syllable)-

finally, cf. PA **gən* 'you' > Carrier *ñən* [ñən], PA *-*cəŋ* 'flesh' > Carrier -*cəñ* [-cəŋ]). The phonemic status of **m* with respect to **ŋ^w* is less clear. The PA sonorant system appears to include three nasal consonants, a labial, dental, and dorso-palatal/velar.³

1.2.3 Vowel constriction and nasalization

The existence of constricted vowels in PA is another controversial point. Constricted vowels are believed to have developed in PA from PPA vowels followed by a laryngeal. Krauss & Leer posit phonemic constricted vowels in PA and their position is reiterated in Krauss & Golla (1981:69): '... PA vowels occurred both with and without a feature identified as glottal constriction (**V* versus **V̥*).' Thus they claim that while constriction is not phonemic in PPA, it has become phonemic by PA, with both non-constricted vowels and constricted vowels existing underlyingly. This can be seen by examining reconstructions of PPA and PA from Krauss & Leer (ms). These are compared with cognates from Navajo.

(3) Navajo	PPA	PA	Gloss
neez	* <i>ŋe's</i>	* <i>ŋé·z</i>	long
teel	* <i>te'ɬ</i>	* <i>té·l</i>	broad
tsaa	* <i>ka'x^w</i>	* <i>kă·γ</i>	big
tsood	* <i>ku'd</i>	* <i>kû·d</i>	grasp
ts'aa'	* <i>ts'ă'k'</i>	* <i>ts'ă·k̥'</i>	basket

Unless **V̥* is interpreted as a phonetic representation of **V̥*?, there are several problems with this interpretation. There is no evidence that **V̥* contrasted with **V̥*? or **V̥*? in PA. On the contrary, **V̥* and **V̥*? are, as shown in the reconstructed forms in Krauss & Leer (1981), mutually exclusive in

distribution, with *V occurring medially and *Vʔ finally. This distribution is evident in the following examples: *wâ:l 'hang suspended,' *-x̣é:s 'wart' vs. *yaʔ 'louse,' *-deʔ 'horn.' In the first two examples, a constricted vowel occurs where the vowel is followed by another consonant while in the second two examples, a non-constricted vowel followed by a word-final glottal stop is found. There seems to be no evidence that constriction was actually phonologized in PA: instead, there appears to be no change in the vocalic system itself from PPA to PA but rather the addition of a rule of constriction which accounted for the phonetic coarticulation of the phonemic sequence V followed by glottal stop.^{4, 5}

Leer (1979) pointed out that the rule of constriction is formally parallel to that of nasalization; V_n becomes Ṿ just as Vʔ becomes V (both before an obstruent). Just as constricted vowels were not phonemic in PA, nasalized vowels were not phonemic either. In many Athapaskan languages, the nasalization process has never become phonologized, but still exists as a synchronic rule.

While constriction and nasalization both appear to be entirely predictable in PA, constricted vowels in the PA forms reconstructed by Krauss & Leer are always treated as phonemic (underlying) and nasalized vowels are treated as phonemic when they are not the final segment of the syllable. This analysis yields a heavily marked vowel system, with phonemic features of both constriction and nasality. This is illustrated in the reconstructions shown in (4).

- (4 a) constriction only: *ṣ̌é·x̣ 'spit,' *-ŋ̣é·z 'long'
 b) nasalization only: *-č̣j̣x̣ 'nose,' *-ẉa·c 'roll'
 c) constriction and nasalization: *x̣̣é·s 'wart,' *ẉ̣i·ɬ 'snare'

The reconstructions in (4) include another redundant feature, vowel length. This feature is automatic for full vowels. One

can conclude then that the reconstructions given by Krauss and Leer for PA are phonetic rather than phonemic.

An interesting aspect of constricted vowels is the development of two opposing tones, high in some languages vs. low in others, which correspond to the same constricted vowel. For example, Chipewyan *-tá* (high-marked), Sarcee *-tò* (low-marked) and Hupa *-taʔ* (non-tonal) derive from **-taʔ*. Disregarding Hupa and the other non-tonal languages, the following question arises: why has the same laryngeal feature (or vowel constriction) given rise to high tone in some languages (e.g. Chipewyan, Slave) and low tone in others (e.g. Sarcee, Dogrib)? Kingston (1985) offers a phonetic explanation by claiming that constricted vowels may have two distinct 'voice qualities.' These are characterized by differences in the fundamental frequency F_0 , which is high in 'tense voice' and low in 'creaky voice'. If these two types of voice qualities existed in different PA dialects, high and low tone would nicely correspond to tense voice and creaky voice respectively. This does not settle the controversy, however. It raises another similar question: why do the opposite voice qualities originate from the same phonetic phenomenon, i.e. vowel constriction?

1.2.4 Glottalized sonorants

Another problem which is closely related to constriction, but is not discussed explicitly in Krauss & Leer (1981) is the phonemic status of a sonorant followed by a glottal stop. Since the PA phonemic inventory includes glottalized obstruents, but not glottalized sonorants, sequences such as *n'*, *y'*, etc. in lexical reconstructions appear to be consonant clusters rather than unit phonemes.⁶ From a universal point of view, it is unlikely that a language has constricted (i.e. glottalized) vowels and glottalized obstruents, but not glottalized sonorants, i.e. constricted vowels presuppose glottalized sonorants.⁷ In fact, evidence from daughter languages for glottalized sonorants is stronger than that for constricted vowels. This is illustrated by the data in (5).

(5)	PA	Navajo (low marked)	Chipewyan (high marked)	Gloss
a.	q ^w ən'	kɔʔ	kún	'fire'
b.	səŋ' ₂	sɔʔ	tθén	'star'
c.	q'ay'	k'aiʔ	k'ái	'willow'

The vowels in these reconstructions (Krauss & Leer 1981) are not marked for constriction, suggesting that constriction is predictable from the final segment. If one assumes that the PA sonorants were glottalized, i.e. *n'*, *y'*, etc. were unit phonemes (*ñ*, *ȳ*) rather than clusters, then an explanation for subsequent changes in the daughter languages is available. The glottalized sonorants are denasalized in Navajo, with nasalization appearing on the vowel, while they are deglottalized in Chipewyan, with tone, the development of constriction, appearing on the vowel. If the glottalized sonorants are unit phonemes, these different types of coarticulation are expected. If they are sequences of phonemes, the environment for vowel constriction must be extended. The data shown in (5) are intended not so much to postulate glottalized sonorants for PA as to emphasize consistent interpretation of phonetic material involving glottal coarticulation and to question the reasoning for the phonemic status accorded to constricted and/or nasalized vowels.

1.2.5 *Reduced vowels*

Another important problem in PA concerns the distribution of reduced vowels. This is essentially a problem of syllable structure, an area in which little work has been done. The core syllable types of Athapaskan include CV, CVC, CvC, and Cv, where 'V' is a full vowel 'v' a reduced vowel. The last of these, Cv, does not occur in the stem, but is restricted to prefixes and (rarely) to suffixes and normally contains the vowel schwa. The apparent skewed distribution of schwa, the paucity of Cv particularly in absolute final position, and the

alternation of schwa and a full vowel, normally *e*, observed in some languages (see below), raise questions about the status of schwa both in synchronic analysis and reconstructions.

There are alternations between schwa in a closed syllable and *e* in an open syllable in Chipewyan, Tolowa, Sekani, and perhaps other languages. In Li's material on Chipewyan (1933a), epsilon represents either schwa or *e* in medial position and *e* in final position, where it is usually followed by *h* (see Cook 1983). Prefixes of the form of *Cə-* are pronounced as *Ce-* in enunciated articulation in Chipewyan, i.e. pronounced with a full vowel in an open syllable. No such alternation is observed in closed syllables. For example, in the pronunciation of *sə-dzəɣ-e* 'my ear', the vowel of the prefix *sə-* 'my' may be lax (phonetically [ə ~ ɛ]) in normal speech or tense (i.e. [e])⁸ in slow articulation where the prefix is pronounced as a syllable. The same vowel in the stem (*-dzəɣ-* 'ear') never alternates with a tense vowel in any style of pronunciation. In addition, the stem-final consonant *ɣ* always closes the stem syllable phonetically, i.e. **dzə.ɣe*, **dze.ɣe* ('.' indicates a syllable boundary). The suffix vowel *-e* 'possessive' cannot form a syllable on its own in any style of speech, i.e. **dzəɣ.e*. This suggests that the stem-final consonant (*ɣ*) functions both to close the stem syllable and open the suffix syllable: it is ambisyllabic. In Tolowa (Collins 1985), the alternation between [ə] and [e] is more general in that schwa in stem syllables undergoes the alternation when resyllabified, e.g. *tʃən* 'stick' vs. *tʃən-eʔ* --> *tʃe.neʔ* 'branch'. Unlike in Chipewyan, the stem-final consonant (*n*) is not ambisyllabic in Tolowa. Hargus (1983) shows, in her analysis of Sekani, that schwa alternates with *e* and *ən* becomes [ɛ], not [ə], apparently blocking reduced vowels in open syllables.

1.2.6 Fricatives

Another problem in PA concerns the incongruent development of fricatives. As pointed out by Krauss (1977), PA fricatives have not developed as systematically as their corresponding stops and affricates, and the status of voicing adds further complications to the development of fricatives.

While the problems discussed in these sections and others need to be resolved, the soundness of Krauss's reconstruction of PA phonology is proven time and again in the growing body of new material.

2. Synchronic studies - phonology and morphology

The study of the structure of the Athapaskan word has been a major focus of research in the Athapaskan literature. Several morphological questions arise time and again in the literature. These questions include the following: What are the lexical forms of morphemes, including phonological shape, category or word class, and meaning? What is the interaction between phonology and morphology - what are the underlying representations of the morphemes that exhibit surface allomorphy? What are the well-defined levels of word formation found in the verb? What is the relationship between derivation and inflection in the verb? These questions have been examined in the descriptive literature (e.g. Hoijer, Sapir & Hoijer, Li, Young & Morgan, Morgan, Kari, Rice, Tenenbaum) and continue to be questions of importance in the recent theoretical literature (Speas, Wright, Rice). In this section, we examine some of these questions and the solutions provided in the literature.

2.1 An overview of the verb

Before turning to the specific questions raised above, it is useful to provide an overview of the structure of the

Athapaskan verb. In this section, we present a brief discussion on the structure of the Athapaskan verb. The topics discussed here are dealt with in greater detail in later sections and are included here to provide the reader with a general overview of the verb before specific issues are dealt with.

The verb has been a topic of major study within Athapaskan linguistics because of its complex nature. The verb is traditionally analyzed as consisting of a stem and a number of prefixes. In (6) the structure of the verb proposed by Cook (1984: 126) for Sarcee is given and in (7) the verb structure proposed by Kari (1979: 43) for Ahtna.

(6) incorporated postposition

adverbial
iterative
incorporated stem
distributive
(direct) object
3p subject (deictic)
thematic
aspect₂
aspect₁ (mode)
1/2p subject
classifier
stem

(7) adverbial

iterative
incorporate
distributive
direct object
1 pl. subject
thematic
indefinite object
3pl. subject
area

seriative
 conative
 inceptive
 gender₁
 gender₂
 completive
 transitional
 s- perfective-negative
 mode
 perfective
 subject
 classifier
 stem (root plus suffix)

The analyses of the verb given by Cook and Kari differ in terms of the number of prefix positions included before the verb stem, with Cook suggesting twelve for Sarcee and Kari twenty-three for Ahtna.

The verb prefixes have been divided into two or three different types. The two major classes of verb prefixes, conjunct and disjunct, have long been recognized (Li 1933b, Kari 1975). The conjunct prefixes are those closer to the verb stem. In Sarcee, the conjunct prefixes include all of those following the distributive morpheme. In Ahtna too, the conjunct prefixes are those following the distributive. The conjunct prefixes are distinguished from a second class of prefixes that are generally called the disjunct prefixes. The conjunct prefixes are closer to the verb stem and are more tightly bonded phonologically with each other than they are with the disjunct prefixes. They begin with a limited range of consonants and contain a very limited range of vowels. The disjunct prefixes, also called preverbs or proclitics in the literature, are further from the verb stem. They begin with the full range of consonants and contain the full range of vowels as well. They appear to have been added to the verb as prefixes more recently than the conjunct prefixes (Sapir 1915). Based on phonological evidence, the conjunct prefixes

are sometimes divided into two sets. Li (1933b) noted that the direct object and deictic pronominals do not pattern consistently with the other conjunct prefixes, but in some ways pattern as if they were disjunct.

The verb prefixes are both inflectional, indicating person, number, mode, and aspect, and derivational in nature. A typical example of a complex verb, taken from Chipewyan (Li 1946), is shown in (7).

(7) *beyé xádánaʔesdzis* 'I sip out of several vessels customarily'

bε- third person object of postposition

yé- postposition 'in'

xá- adverbial 'out' (disjunct)

dá- distributive (disjunct)

na- iterative (disjunct)

ʔε- indefinite object (conjunct)

s- first person singular subject (conjunct)

d- classifier, used with the iterative (conjunct)

-zis 'to sip (customary form)'

The most basic lexical entry for the verb is the verb theme, a level of representation discussed in section 2.4.1. The verb theme consists of a stem and any prefixes that must always occur with that particular stem. The verb theme is a constituent of the verb base, a verb theme with derivational prefixes, but without inflectional prefixes. Some examples of Navajo verb themes and bases in which they can occur, from Sapir & Hoijer (1967), are given in (8) and (9).

- (8) verb theme yá- Ø-tééh, tìʔ, -tìh (Ø-imperfective, s-optative)⁹
 'talk, a discussion goes on'
 yá- adverb + Ø classifier + stem
 verb bases yá-...di-...Ø-tééh (Ø-imperfective, s-optative)
 'talks, discussions begin'
 di- inceptive
 ha-yá-...Ø-tééh (Ø-imperfective, s-optative)
 'talking is heard from a distance'
 ha- adverb
- (9) verb theme ha-...Ø-tààł, -táál, -tàł (Ø-imperfective, y-perfective)
 'sing a song'
 ha- impersonal (areal)
 verb bases nì-ha...Ø-taaʔ (n-imperfective, n-perfective)
 'finish singing a song'
 nì- adverb

With the addition of the inflectional pronominal prefixes, the verb word is formed.

Each verb word thus contains a verb theme plus pronominal inflection. It may contain derivational prefixes as well, giving a level of verb base. The verb themes themselves are organized into a number of verb theme categories (see Kari 1979). The verb theme categories unify the various verb themes of the language. The themes within a verb theme category share semantic features, can occur in the same range of aspects, and tend to be similar in terms of derivational potential.

Cross-cutting the verb theme system is a system of mode and aspect. The terms 'mode' and 'aspect' are not used systematically in the Athapaskan literature (see Cook 1984 for discussion). They are used here as structural

nomenclature with the understanding that the terms (especially 'mode') are not necessarily consistent with well-established usages in general linguistic literature. In the Athapaskan languages, a verb can occur in a number of different 'modes', usually including imperfective, perfective, optative, and future. Mode is generally signalled by a conjunct prefix. There are also a number of different 'aspects', marking the kind of action involved. For example, in Ahtna (Kari 1979), the aspects identified are momentaneous, perambulative, reversative, persistive, continuative, durative, semelfactive, onomatopoetic, repetitive, conclusive, transitional, neuter, comparative, customary, distributive, and progressive. The aspects are defined on semantic terms and by what are often termed conjugation patterns, or co-occurrence with particular morphemes in the different modes.

Having established some basic terminology, it is now possible to examine some of the topics that have been major foci of interest within the study of Athapaskan phonology and morphology in recent years.

2.2 Lexical forms of morphemes

In the following sections we examine first the distinction between root and stem. We then turn to the various lexical categories in the grammar of an Athapaskan language and the relationship between these categories. Finally we examine some of the research on the meanings of stems.

2.2.1 *Roots and stems*

It has long been recognized in the Athapaskan literature that every major category lexical item (noun, verb, postposition) is built around a stem where the stem¹⁰ has a constant meaning associated with it. In much of the early Athapaskan literature (e.g. Sapir & Hoijer 1967), the fact that stems had different forms in different modes and aspects¹¹ was recognized, but the stem was nevertheless treated as the

lowest level of structure. This can be seen in the following statement taken from Sapir & Hoijer (1967): '... the theme is divided into its thematic prefixes, if any, and its stem.' Regularities across modes and aspects were noted, but each different stem form was treated as a morpheme on its own. This can be seen in the following paradigm, taken from Sapir & Hoijer (1967:102).¹²

(10) 'handle a round, solid object'

	imperfective	perfective	progressive- future	iterative- customary	optative
S1	-ʔààh	-ʔa	-ʔáát	-ʔááh	-ʔáát
S2	-ʔá	-ʔá	-ʔaàt	-ʔáàh	-ʔáʔ
S5	-ʔààh	-ʔá	-ʔaàt	-ʔááh	-ʔáát
S6	-ʔá	-ʔa	-ʔáát	-ʔááh	-ʔáát
S7	-ʔaʔ	-ʔá	-ʔáát	-ʔáàh	-ʔáʔ
S8	-ʔààh	-ʔàʔ	-ʔaàt	-ʔáàh	-ʔáʔ
S9	-ʔááh	(appears only in imperfective)			

Sapir & Hoijer (1967) point out that a verb stem may have 'from one to as many as five distinctive allomorphs' (101). They thus treat the stem as a simplex unit.

In work of Leer (1979), it was explicitly recognized that there is a level of structure below that of the stem, the level of root. Leer makes the following statement: "A root is here defined as an underlying form, from which through regular phonological modification of the vowel nucleus and/or suffixation, the stems of a given stem set or group of stem sets may be derived. A stem is thus defined as root \pm modification \pm suffix" (3). A synchronic analysis that assumes that a stem is composed of a root plus a suffix (including segmental suffixes, tonal suffixes and ablaut) is provided by Kari (1979) for Ahtna. Some of the aspect suffixation formulae that he proposes are shown in (11).

(11)	I	P	F	O	PN	Cust	I	P	F	O	PN	Cust
					CV.							CV(·)X, CV(·)R(·)
concl.	Ø	N	ɪ	ɪ	ɪ	g	Ø	N	Ø	Ø	N	short: E
												long: g
cont.	'	N	'	'	'	E	Ø	N	Ø	Ø	N	short: E
												long: g+E

abbreviations:

I = imperfective, P = perfective, O = optative, PN = perfective negative, Cust = customary, concl. = conclusive, cont. = continuative, E = expansion (lengthening of reduced vowels, umlauting of e· to i.)

Hardy (1979) examines stem formation in Navajo and shows its regularity across modes and aspects in that language. Rice (forthcoming) looks at stem formation in Slave and shows that even in a highly innovative language, there are many identifiable suffixes. Cook (1972, 1984) shows regular suffixation processes in Sarcee. In the literature then there is a general acceptance of the claim that the stem is not a monomorphemic unit but is itself a derived unit, a root plus a suffix. The term 'stem' is used informally in the literature, with frequent reference to stem set, the stems derived by suffixation from a common root. While Athapaskanists continue to use the term 'stem,' it should be understood that the stem is not actually a primitive level of structure in Athapaskan morphology.

2.2.2 *Lexical categories*

In the traditional literature, two distinct positions on the number of word classes have been taken. Hoijer proposes that there are three major word classes, noun, verb, and postposition, based on inflectional grounds:

'Three word classes are distinguishable by inflectional criteria alone: nouns, postpositions, and verbs. Nouns are subject to only one inflection, the possessive, in which the noun base is preceded by a pronominal prefix that refers

to a possessor. Postpositions are similarly inflected, but in this case the pronominal prefix refers not to a possessor but to the goal of the postposition. Verbs are subject to inflection for person, number, aspect or mode or tense, and for voice. Some verbs have only one inflection; others may be inflected in as many as seven paradigms' (Hoijer 1971:114).

In addition to these classes, Hoijer notes that there are a number of categories that are uninflected and are distinguished on syntactic rather than morphological grounds. These include pronouns, demonstratives, adverbials, and conjunctions.

Li (1946), on the other hand, suggests that there are three main classes of words, the noun, the verb, and the particle: 'The noun may be inflected according to its possessor, and often presents a possessed form different from the free form. The verb may be inflected according to aspect, mode, person, number, voice, etc. The particle rarely changes its form, and includes a large number of words of diverse meanings, such as the pronouns, the numerals, and other syntactic particles' (Li 1946:401).

The major difference between the position taken by Hoijer and that taken by Li is in whether there is a coherent class of postpositions. Hoijer claims that this is a well-defined class while Li suggests that postpositions are 'local nouns and therefore belong to the same class of words as the nouns' (403). Hoijer's position has been generally adopted in the more recent literature (Young & Morgan (1980), Rice (forthcoming)). However, Cook (1984) takes the position held by Li. He suggests that while noun phrases and postpositions are distinct syntactically, having different distribution and function, postpositions are morphologically a subcategory of nouns. Cook argues that postpositions are nouns which almost always occur with an inflectional pronoun, similar to inalienably possessed nouns. Because they share this property with nouns, Cook argues, they reduce to nouns. Rice (forthcoming), looking at Slave,

recognizes that postpositions must be inflected for object and that nouns in the possessive construction are obligatorily inflected for possessor. She suggests that despite this similarity, there are other differences that suggest that postposition and noun are distinct lexical categories. Nouns and verbs often share a common root; roots used as postpositions never occur in a second category. Nouns and postpositions also pattern differently in the reflexive construction. Rice (forthcoming) also proposes that there is a class of nouns that are similar in meaning to postpositions. These she terms relational nouns. These forms show the syntactic distribution of nouns and are inflected in the reflexive construction like nouns. These facts, she claims, suggest that despite inflectional similarities, two lexical classes, noun and postposition, are required, at least for Slave.

We turn now to the relationship between noun and verb stems. As has often been noted, in Athapaskan languages many stems can be used both nominally and verbally. Hargus (1985) gives the following nouns and verbs that are based on the same root in Sekani. The noun is given on the first line and the verb on the second line. Classifiers other than the zero classifier are indicated as part of the verb.

- | | | | |
|------|----|-----------|------------------------------|
| (12) | a. | t'às | 'arrow' |
| | | h-t'às | 'shoot O with bow and arrow' |
| | b. | t'oghəs | 'paddle' |
| | | h-t'oghəs | 'paddle O' |
| | c. | shən | 'song' |
| | | d-shən | 'sing' |
| | d. | xətl'e | 'nighttime' |
| | | h-xətl' | 'become dark, night' |

Hoijer, following Sapir, proposes that this relationship between noun and verb stems suggests their common origin in a Proto-Athapaskan noun base. Hargus (1985) and Rice

(forthcoming) propose that the items that can occur as either noun or verb stems have a common root that is unmarked for category. The addition of stem-forming suffixes, often null, determines the category of the root as either noun or verb. A solution to the problem of roots appearing in more than one category then might be to treat such roots as unmarked for category rather than deriving one category from the other.

In addition to noun, verb, and postposition, several other categories have been proposed on grounds other than inflection. As mentioned, both Hoijer and Li lump other categories together as particles, where this category includes pronouns, conjunctions, numerals, and, as Li (1946:401) says, 'other syntactic particles'. Young & Morgan (1980) distinguish pronouns, adjectives (demonstrative, numeral, descriptive), adverbs, and conjunctives in addition to the major categories of noun, verb, and postposition. They also distinguish a number of different types of enclitics, including subordinating and temporal-modal. Cook (1984) and Rice (forthcoming) are more splitters than lumpers, looking at what category labels are required in the lexicon in addition to noun, verb, and postposition in order to account for both morphological and syntactic properties of all lexical items. Cook proposes the following categories: adverbial, qualifier, quantifier, deictic/demonstrative, determiner, and delimiter. Rice has a similar list; she includes categories of demonstrative/determiner, adverb, quantifier, tense/mode/aspect, complementizer, adjective, conjunction, and particle (focus, topic) in addition to noun, verb, and postposition.

The area of lexical categorization is one that requires additional work in the Athapaskan languages. As can be seen from the discussion, there is not even agreement on just what major categories are required. A set of well-defined criteria is required to determine just what the set of minor categories is.

2.3 Meanings of verb roots

A more appropriate title for this section is 'meanings of verb themes.' The level of verb theme will be dealt with in section 2.4; at this point suffice it to say that the basic unit of meaning in the lexicon is not the root but rather the theme.

In this section we look at two semantic systems found in the verb theme, the classificatory system and the control system. Another semantic system found in the verb, the verb theme category system, is discussed in section 2.5.

2.3.1 *Classificatory verbs*

The classificatory nature of a set of Athapaskan verbs has long been recognized (Hojier 1945; Davidson, Elford, and Hoijer 1963; Carter 1976; Garrison 1974; Basso 1968, Lieber-Harkort 1984, and elsewhere). Different verb themes are used depending upon characteristics of the noun that is semantically the theme of the verb (subject of intransitive, object of transitive). The different classes found in Navajo, as outlined by Young & Morgan (1980), are shown in (13).

- (13) solid, roundish object class
 load, pack, burden class
 plural objects class- several objects
 plural objects class-larger number of smaller objects
 noncompact matter class
 open container class
 slender flexible object class
 animate object class
 slender stiff object
 mushy matter class
 flat flexible object class

Rice groups the Slave classificatory verbs into the following groups.

2.3.2 Control

While the fact that verbs in Athapaskan are classificatory and that different semantic domains can classify in different ways has been recognized in the Athapaskan literature, the different semantic domains have been less well studied. In this section we will look briefly at one well-defined domain that has been recently identified.

The stems found in groups I and II in Navajo, as identified above, are frequently translated in similar ways. For instance, Kari, writing on Ahtna, translates *-chu* as 'handle clothlike object' and *-ʔah* as 'handle clothlike object violently.'

In an interesting proposal made by Rushforth & Tatti (1980), it is claimed that the semantic domains differentiated by such pairs of verb stems in Bearlake Slave is not limited to the set of verbs traditionally described as the classificatory verbs (as outlined in (13) and (14) above). In addition, they suggest that controlled as opposed to independent movement is not the appropriate semantic feature to differentiate the two classes of verbs. Rushforth & Tatti point out that throughout the verb system of Bearlake Slave, there are two verb stems that share a basic semantic domain. Some of these are shown in (15).

(15)	-táh vs. ʔeh	'action with foot'
	-dah vs. -tla	'sg. go'
	-ʔáh vs. shé-tj	'eat'
	-dɔ vs. -ts'éh	'drink'
	-ʔah vs. -chu	'handle clothlike object'
	-le vs. -wa	'handle pl. object'

Rushforth & Tatti indicate that the existence of two stems of similar meaning is pervasive throughout the verb system of Slave.

Similar pairs of verb stems are found in Navajo. The examples below are taken from Young & Morgan (1980).

(16)	-ʔéés vs. -taaʔ	'move or act with foot'
	-k'ááh vs. -tláád	'burn'
	-níh vs. -chííd	'act with hand, arm'

Kari (1979) states that in Ahtna the verbs of motion are often found in pairs, with one meaning slow motion and the other fast motion.

Rushforth & Tatti characterize the semantic difference between these verbs in terms of the two classes '*seodjt'e/seodjt'ele*', (in Bearlake Slave) or 'control/noncontrol'. The verbs in Young and Morgan's group I are *seodjt'e* verbs, or verbs where the action is carried out in a careful, humble, controlled way while those in group II are *seodjt'ele*, or verbs where the manner in which the activity is done less carefully, more quickly. Rushforth & Tatti are careful to point out that the *seodjt'e* verbs are not negatively valued.

The existence of a control system has been documented extensively for Slave (Rushforth & Tatti 1980, Rice forthcoming). It seems to exist in Navajo and Ahtna as well and also in Sekani. It is a topic that warrants closer investigation in the other Athapaskan languages.

2.4 Levels of representation

Sapir & Hoijer define three levels of constituent structure in the Athapaskan verb:

'A verb form is analyzed in three steps: (1) the base is separated from the inflectional prefixes, (2) the base is divided into its adverbial prefixes, if any, and its theme, and (3) the theme is divided into its thematic prefixes, if any, and its stem.' (1967: 85)

Examples of verb themes and verb bases are provided in section 2.1. As discussed in section 2.2.1, the stem itself can be broken down into a root plus mode/aspect suffixes. In this section we examine first the level of the theme and second the level of the base.

2.4.1 *The theme*

The verb theme has long been recognized in the Athapaskan literature as a level of word formation. It always includes a root, as defined above. In addition, it includes any derivational prefixes that are always present with a root under a particular meaning. The Slave verb theme for 'pray, speak' is given in (17). The prefixes present in this theme must occur in every verb built on this theme, as illustrated by the examples in (17). The underlined morphemes are part of the verb theme.

(17) <u>ya-h-ti</u>	'preach, speak'
<u>yahti</u>	'preach, speak'
séní <u>yaʔehtí</u>	'judge'
nayaʔ <u>ehtí</u>	'meet, discuss'
kayaʔ <u>ehtí</u>	'interpret'
xaya <u>detí</u>	'pray' ¹⁴

While there is general agreement that the theme consists of the root plus affixes present in all modes, aspects, and persons, the status of the classifier as part of the theme is not agreed upon, as discussed by Cook (1984).¹⁵ Cook points out that Sapir & Hoijer (1967) treat the classifier as part of the base in Navajo, Edgerton (1963) considers it to be inflectional, and thus not part of the theme, in Western Apache, and Young & Morgan (1980) treat the classifier as a constituent of the stem. This confusion about the status of the classifier seems to arise from the fact that the classifiers have two distinct functions. In the following discussion, we assume that there are four classifiers, \emptyset , t , l , and d . (See Stanley (1967), Cook (1971a), Hargus (1985), Kari (1979),

Rice (forthcoming) for discussion of the status of the *l* classifier as underlying or derived from a combination of *d+t*.) Every verb theme occurs with one of these classifiers. As discussed by Rice (forthcoming) and others, the inclusion of the classifier as part of the verb theme is necessary because it is not possible to predict which classifier will occur with a particular theme. The classifiers thus must be treated as part of the basic lexical entry, or theme. However, some of the classifiers, namely *t*, *l*, and *d*, also have a derivational function in addition, indicating voice: *t* is a transitivizer/causativizer and *l/d* marks passive, reciprocal, reflexive, and a few other functions. These derivationally relevant classifiers are not part of the verb theme under the definition given above since they need not be present in every mode and aspect, but are added to a theme during the course of lexical derivation. The theme thus seems to be a well-defined level of structure: every verb theme includes a lexical classifier, a root, and any other prefixes that are always present.

Before turning to the verb base (the verb theme plus derivational affixes), it should be stressed that the lowest lexical unit, i.e. the basic lexical entry for a verb, is the theme. While the root is a clearly isolatable unit within the stem, this unit does not itself have a definable lexical meaning associated with it: the meaning is part of the verb theme.

2.4.2 *Base*

The verb base, as defined by Sapir & Hoijer (1967), is the verb word without inflection. The need for such a level in the verb has been of some controversy in the more recent Athapaskan literature. As defined by Sapir & Hoijer (1967), the base is the verb form with the inflectional prefixes stripped away.

Two different issues can be recognized with respect to the base. First, it has been questioned whether the base is a well-defined level of structure. Second, assuming that the base is a level of structure that is well-defined, it has been questioned just what prefixes are part of the base. This question is really

one of what is considered to be inflectional morphology in Athapaskan languages.

The base is, as Cook (1984) points out, motivated by the existence of adverbial and postpositional disjunct prefixes that are part of the verb word. He suggests that these elements may not actually be part of the verb word, but are perhaps independent morphemes that are incorporated into the verb word by cliticization at some late derivational stage. If this is the case, Cook suggests, then the theme is a well-motivated level of structure and the next level of structure is the verb phrase. The base is probably not a necessary constituent independent of the theme and the verb phrase (129). Notice that this question really reduces to a different one: which morphemes are part of the verb word and which are independent of the verb?

The position that there is not a level of base is not generally accepted in the Athapaskan literature. The level of base, a level at which derivation is completed and inflection has not yet taken place, is assumed in the traditional literature and also in more recent literature (e.g. Sapir & Hoijer 1967, Young & Morgan 1980, Kari 1979). Kari, for instance, (1979) incorporates a level of base in the model he proposes for the Ahtna verb. Specifically, in his model the base is the theme plus derivation. The level of verb word is reached by adding inflection, which includes gender, person, and mode-negative. Kari thus has a well-defined notion of base. While he does not identify the grounds on which he identifies certain verbal material as derivational and others as inflectional, the model that he proposes involves distinguishing derivation from inflection.

The question that arises in the more recent literature has to do with a different aspect of this question. In this literature, it is assumed that any morpheme that can determine conjugation is part of the verb word. The question that is focussed on is whether inflection is distinct from derivation. Hargus (1985) and Rice (1985, forthcoming) propose lexical phonology models of the Athapaskan verb, models where prefixes are added from right to left, with the phonology happening in

conjunction with the morphology. The verb is viewed as composed of four distinct levels of word formation, with the stem formed on the first level, the conjunct prefixes (minus the direct object and deictic subject) added on the second level, the remaining pronominals on the third level, and the disjunct prefixes on the fourth level.¹⁶ In these lexical phonology models, the levels found in the verb are thus defined based on surface ordering and phonological criteria rather than on morphological criteria. Inflection and derivation are not distinguished in the levels proposed in this work, but are mixed together.

Problems with this phonologically-based model have been pointed out in work by Wright (1987) and Speas (1986), amongst others. They approach the issue of what structure the Athapaskan verb has from the perspective of universal grammar. The observation has often been made that derivational affixation tends to occur inside inflectional affixation. As pointed out by Anderson (1982), this is because inflection is basically syntactic in nature, while derivation is basically lexical. It can be well demonstrated that certain of the affixes in the Athapaskan verb are inflectional in nature in that they have reference outside of the verb and they are dependent on configurationality and hierarchy. The affixes for which this has been best demonstrated are those of person and gender. See Rice (1985a), Saxon (1986), and Speas (1986) for discussion. A model such as that proposed by Kari (1979), where inflection is added after derivation, thus seems to have some support if the assumption that inflection must be added after derivation is maintained.

Whether the mode/aspect morphemes, a category traditionally considered to be inflectional, actually function inflectionally in the Athapaskan languages is a poorly understood question. In order to show that they are inflectional, one might look for syntactic co-occurrence restrictions. Speas (1986) and Wright (1987) suggest another criterion: because of co-occurrence restrictions between adverbial prefixes and conjugation markers, the conjugation

markers can be added only after the addition of the adverbial prefixes to the verb. There thus are two criteria that determine order of affixation. First, clearly inflectional elements such as agreement markers are added late and second, co-occurrence restrictions between two sets of affixes suggest that the affixes that are dependent cannot be added until those that determine the choice of dependent affix are added.

Once a model with a distinct inflectional component is proposed, another question arises. In Athapaskan, the inflectional morphemes are not ordered as the outermost morphemes of the verb, as is the case in many languages. The subject markers immediately precede the classifier and the direct objects and deictic subjects come directly between derivational affixes. If inflectional morphology follows derivational morphology, then it must be the case that the inflectional morphemes are infixes into the verb. Recent research has focussed on two questions: arguing that the person affixes are inflectional (Rice 1985a, Speas 1986) and finding well-defined frames into which the inflectional morphemes can be inserted (Hargus 1985, Speas 1986, 1987, Wright 1987). The first question, that the person affixes are inflectional, is explicit in the traditional definition of base. The second question, how the inflectional morphemes are affixed to the verb, is one that was not formalized in the traditional literature.

2.4.3 *Summary*

To summarize, the model of the verb most commonly proposed in the current literature is very similar to that proposed in the traditional literature. The following model is generally found:

(18) verb word

verb base - verb word without the inflectional affixes
(person, gender)

verb theme - verb base without derivational prefixes,
consisting of one or more prefixes and a root + stem-
forming suffix

2.5 Verb theme categories

The verb themes in Athapaskan languages, where 'verb theme' indicates the most basic lexical entry of a verb, can be divided into a number of well-defined categories. Sapir & Hoijer (1967) and Hoijer (1949) divide the verbs into two categories, active and neuter, which are in general comparable to active and stative verbs respectively.

The notion that verb themes fall into different categories is developed by Golla (1970) in an analysis of Hupa. Golla proposes that verb themes can be divided into four well defined theme classes based on their derivational potential. These theme categories, based on semantic criteria, are descriptive, motion, action, and extension. Some examples of Hupa verb themes in each of these theme categories are given in (19).

(19) descriptive theme system

nɪ-kʷah	'be big'
ʔɪ-cuɬ	'be blue, green'
dɪ-l-ma·	'be gray'
sɪ-dɪ-yan	'be old'
kʷɪ-dɪɬ	'a jingling, ringing noise'

motion theme system

-ʔɪɬ	'swim, bathe somewhere'
l-Guɬ	'crawl (somewhere)'

extension theme system

nɪn-ʔa '(one) extends'

nɪn-lɪn '(a stream) extends'

action theme system

themes with general meaning 'do something, do something to O'

Golla discusses in detail the nature of the different theme systems and the derivational potential of the different systems.

Kari (1979) argues persuasively for Ahtna that each verb theme has as part of its lexical entry the verb theme category in which it falls. Verb theme categories are the basic unifying feature of the Ahtna verb system. Kari suggests several ways in which verbs in a particular verb theme category are similar. Each of the verb theme categories is semantically uniform and is similar in structure. The verb themes within a category have similar derivational potential. Members of a particular theme category share a primary aspectual string, the conjugation marker (**n*, **s*, **ɣ*) taken in the imperfective and perfective by a verb with no derivational affixes. In addition, the themes within a verb theme category share also in what aspects they can take. Themes within a category also share suffixation patterns for aspect and mode.

Kari (1979) proposes the following verb theme categories for Ahtna: motion, successive, operative, converse, extension, stative, positional, classificatory, descriptive, and dimensional. In addition, there are several uncategorized themes. For example, motion themes are those which involve movement, including themes such as 'go', 'handle', 'fly', 'swim', 'crawl'. In the primary aspectual string, these themes require the conjugation marker in both the imperfective and perfective. They can occur in a large number of different aspects: momentaneous, perambulative, reversative, persistive, continuative, as well as the super-aspectual strings of errative, customary, and distributive. Converse themes refer to the termination or end result of an activity or

process, including verbs such as 'make singular object', 'urinate', 'freeze', and 'dry'. These verb themes all require the \emptyset conjugation marker in the imperfective and the *s* conjugation marker in the perfective. They occur in a number of aspects: conclusive, reversative, continuative, repetitive, and customary.

Kari proposes that the verb theme category system found in Ahtna is a feature of Proto-Athapaskan grammar and is retained in Athapaskan languages in general. This conclusion is reinforced in research on Slave by Rice (forthcoming) and on Sarcee by Cook (1984). Rice proposes very similar verb theme categories in Slave to those proposed by Kari for Ahtna. The verb theme category system in Sarcee does not appear to be as highly developed as that in Ahtna and Slave, but nevertheless clearly exists. Cook proposes the following verb theme categories in Sarcee: classificatory, motion, succession, duration, repetition, and neuter.

2.6 Aspect

As has been noted in the Athapaskan literature (see for instance Cook 1984), the terms 'aspect' and 'mode' have been used in a variety of ways in Athapaskan studies. These terms define structural positions in the verb; they have never been used in a semantically well-defined way.

Hoijer (1949) and Sapir & Hoijer (1967) employ the term aspect as the cover term for the set of affixes that indicate momentaneous, continuative, repetitive, semelfactive, diversative, reversative, distributive, conative, and transitional. Mode, on the other hand, defines imperfective, perfective, progressive, iterative, and optative. Li (1946) reverses Hoijer's and Sapir's use of these terms, labelling neuter, momentaneous, continuative, customary, progressive as modes and imperfective, perfective, and future (optative) as aspects.

Kari (1979) uses the terms aspect and mode in a similar way to Hoijer. Aspect includes momentaneous, continuative,

and other categories. The verb theme category of a theme determines which aspects the theme can occur in. All themes, on the other hand, occur in the different modes. Suffixation patterns are determined by both aspect and mode.

Suffixation patterns in PPA and PA are explored in detail in a seminal monograph by Leer (1979). The systematic nature of stem variation is well-attested in subsequent synchronic analyses (e.g. Hardy 1979, Cook 1984, Rice forthcoming).

As mentioned above, the concepts encompassed by the terms 'mode' and 'aspect' as generally used in the Athapaskan literature do not parallel the traditional more semantically germane definitions given these terms. The usage of these terms is discussed in detail in Cook (1984) and also in Rice (forthcoming).

Related to the area of mode and aspect is the number of positions occupied by the mode markers. Hoijer defines mode more specifically than simply imperfective, perfective and optative; he posits \emptyset -imperfective, *n*-imperfective, *gh*-imperfective, and *s*-imperfective, *n*-perfective, *gh*-perfective, and *s*-perfective. Kari suggests that \emptyset -perfective, *n*-perfective, *gh*-perfective, and *s*-perfective are not four distinct morphemes, but that there are four morphemes \emptyset , *n*-, *gh*-, and *s*-, each of which can combine with a perfective morpheme. Rice (1985b, to appear) takes up and extends this position. She argues based on Slave that there are four morphemes that she terms conjugation markers, \emptyset , *n*, *w* (**s*), and *y* (**gh*). These morphemes can combine with the morphemes she calls mode markers, \emptyset (imperfective), *n̄*- (perfective), and *ghu*- (optative). She suggests then that conjugation and mode occupy two distinct positions of the verb and shows that for Slave all possible combinations that one might expect actually occur. Rice & Hargus (this volume) support this position with data from both Slave and Sekani. Cook (this volume) lends some support to the position based on data from Chilcotin.

2.7 Phonology

There has been extensive work on the synchronic phonology of many Athapaskan languages in recent years. Only a sampling of the areas of study is touched upon in the discussion here.

2.7.1 *Tone*

Sapir's (1925) 'pitch accent' in Sarcee was the first significant discovery in Athapaskan tone. In this article, he recognized three level tones and six contour tones for Sarcee, the latter of which are interpreted as phonetic realizations of any two underlying level tones (Cook 1971b). The most important work on Athapaskan tone since the discovery of marked tones by Krauss, is the description of Carrier tone by Pike (1986) and Story (this volume). The perturbation of underlying tones and allotonic variations conditioned by syllable onset consonants as well as vowel qualities in Carrier offer an explanation for why Carrier tone could not be explained in terms of marked tones. This revelation of Carrier tone has further ramifications for the study of Athapaskan tone, as well as for the study of tone in general, since the phenomenon is likely to occur in other languages, particularly those that are closely related (see Cook this volume). Additionally, the 'accentual' nature of Carrier tone, the floating tone of Fort Nelson Slave (Rice this volume), the metrical nature of stem tone in the Hare dialect of Slave (Rice 1987a), and the tone reversal in Chilcotin (Cook this volume) reveal complexities of Athapaskan tone that have not been reported before, offering a new incentive for further research.

2.7.2 *Pharyngealization*

Another significant discovery in Athapaskan phonetics and phonology is pharyngealization, the quintessential feature of Babine and Chilcotin phonology. The pharyngeal feature associated with the uvular series and a dental series in Chilcotin and that associated with the two tense series (aspirated and glottalized) in Babine plays a significant role in

the phonologies of Chilcotin and Babine and provides significant new data for the research on pharyngealization in general as a phonetic feature and an areal feature shared by Interior Salish (see Cook 1987).

2.7.3 *Pan-Athapaskan phonological rules*

There are many phonological (morphophonemic) rules that are virtually identical in many of the Athapaskan languages. These include such well-known processes as the D-effect, sibilant (strident) assimilation, voicing alternation of fricatives, and nasalization, all of which have been studied in detail in recent years. (See, for example, Howren 1971, Rice 1987b on the D-effect, Cook 1984, Halle and Vergnaud 1981 on sibilant assimilation, and Howren 1968, Kari 1976, Cook 1984, Hargus 1985, Rice 1987c on voicing alternations. It should be noted that this list is by no means complete.) Much recent work has dealt specifically with the verbal phonology of various languages. See, for instance, Kari (1976), Hargus (1985), Wright (1987), and various papers by Cook and Rice.

While the focus of study has been on synchronic description of individual languages, with the increase of accurate descriptive data, it also becomes possible to attempt a comparative study of these shared rules. Such a study has merits in its own right, and the evolution of shared rules might shed light on mutual relationships and contact among the languages that share (or do not share) certain properties. Nasalization, which has existed since the PA period, is a case in point. This rule remains virtually intact as a synchronic rule in Chilcotin (Cook 1986), and as a synchronic process with a slight change in the specification of the rule environment in Sekani, Slave, and Dogrib among others (Hargus 1985, Rice forthcoming). It is no longer a synchronic process in other languages, either because nasalization has become phonologized, as in Chipewyan, or because the rule is not recoverable synchronically due to the loss of nasality, leaving no trace of nasalization, as in Sarcee and Carrier.

2.8 Summary

In this section, only a few of the important issues in Athapaskan morphology and phonology have been explored. These include what levels are well defined in the verb word, what the major lexical categories found in an Athapaskan language are, the relationship between inflection and derivation, and the semantics of verb themes. In all these areas, there is still much that is not understood and there is room for extensive further research. There are many other areas of morphology that have been not touched on at all. The semantics of the derivational affixes remain poorly understood. Many of the derivational affixes are not part of the verb theme, but nevertheless do not seem to be used very productively. The question arises whether these affixes have the same status as the highly productive derivational affixes. Kari (1979) proposes a level of the verb that he dubs subthematic. He says:

'We might, for example, distinguish in level one (i.e. theme) a primary verb theme of very abstract meaning and in level two (i.e. subtheme) one or more subthemes with some additional thematic prefix(es) and a more concrete meaning. The incorporates ... are clear instances of subthematization. Also a change in transitivity or an additional conjunct prefix can be added to a theme to create a subtheme.' (60)

The area of incorporated stems is also one deserving of further study. There are many Athapaskan languages that allow stems to be incorporated into the verb complex. Tenenbaum (1978) gives a long list of such stems in Tanaina, as does Rice (forthcoming) for Slave. The syntax of the incorporated nouns is far from well understood, as is the level at which they become part of the verb word. Far more work remains to be done on the levels of structure in the verb and on exactly how the verb is formed.

The question of allomorphy in prefixes has not been addressed. As is well known, many of the conjunct affixes in the verb have different forms depending on mode. Whether these forms are related phonologically and morphologically or whether they must be listed as suppletive variants in the lexicon is a question that is not well understood. Rice (1985b, forthcoming) treats them as phonologically related. Cook (this volume), on the other hand, suggests a suppletive relationship between these morphemes. There is clearly room for more study of this area. As the phonology of the verb becomes better understood, some answers to this issue might become apparent.

Within the area of phonology, the phonology of the verb prefix complex remains poorly understood despite extensive study. Headway has been made on a few areas, such as the representation of the *d* and *l* classifiers, voicing alternations of fricatives, and nasalization. However, the complexities of the phonology of the aspect-mode-subject-classifier positions, while discussed in the literature, have not yet received a satisfactory explanation, and continue to require numerous idiosyncratic rules. The recent work by people such as Wright (1987) that takes syllable structure into account appears to provide a valuable direction for research into the phonology of the verb prefix complex, and in fact the phonology of Athapaskan in general.

3. Synchronic studies - syntax

The area of syntax is one not explored in great depth in the early Athapaskan literature. Li (1946) includes a very short section in his Chipewyan sketch that is called word order, where he points out that the verb is generally the final word of the sentence. Landar (1963) also studied Navajo syntax. Sapir (1923) presents a morphosyntactic study on the topic of relative clauses. In the more recent literature, both Cook (1984) and Rice (forthcoming) provided extensive

descriptions of a variety of syntactic structures in Sarcee and Slave respectively.

In this section three major issues in recent syntactic studies in Athapaskan are examined. These are the areas of anaphora, word order, and of direct discourse.

3.1 *bi-/yi-* alternations

One issue that has arisen frequently in the Athapaskan literature is based on a problem noticed early on in Navajo, a problem that has become known as the *bi-/yi-* alternation in Navajo. In Navajo, there are two pronouns, *bi-* and *yi-*, that are both identified as third person. These are illustrated in (20).

- | | | |
|------|------------------------|------------------------|
| (20) | ashkii at'ééd yiyiĩtsá | 'the boy saw the girl' |
| | at'ééd ashkii biĩtsá | 'the boy saw the girl' |

Haile (1941) suggested that *bi-* was the primary form with *yi-* being used under special circumstances. Hoijer (1968) suggests the opposite, with *yi-* being basic. Reichard (1951) correlates the use of *yi-* with active and *bi-* with passive. Hale (1973) argues that a transformation that he terms subject-object inversion, is involved in deriving the second sentence from the first. This transformation is considered to be similar in nature to that of passivization in English.

Hale goes on to show that the transformation is constrained by a noun hierarchy. He suggests that nouns are ranked on a scale of animacy. When both nouns are human, the transformation is optional. It cannot apply if the subject noun in the *yi-* sentence is of higher rank than the object and it must apply when the object noun of the *yi-* sentence is of higher rank than the subject. Thus, the first noun in the sentence must always be at the same point on the animacy and power hierarchy or higher than the second noun. The exact nature of the hierarchy was examined in more detail in later

literature, by Creamer (1974), Liebe-Harkort (1985), Witherspoon (1977), and others. This work refines Hale's original hypothesis, but the general notion that a hierarchy is necessary is maintained.

Perkins (1978) examines the *bi-/yi-* alternation from another perspective. She is not so concerned with the semantics of the pronouns as she is with their overall distribution. She thus does not focus on the animacy hierarchy, but rather examines principles for interpreting grammatical relations. She suggests that sentences are freely generated with *bi-* and *yi-* both. Rather than deriving one form of the pronoun from the other, she proposes ways of assigning grammatical relations of subject, object, and indirect object based on the position of a noun with respect to other nouns in a sequence and based on whether *bi-* or *yi-* is present. In postpositional phrases of location and direction, *yi-* is used with animate subjects and *bi-* with inanimate subjects. Finally, in sentences with verbs of motion and postpositions of location and direction, *bi-* is used as object of the postposition if the object of the postpositional phrase undergoes motion to a specific end point as indicated by locative enclitics while *yi-* does not involve a specific endpoint. Perkins rejects a transformational account of the *bi-/yi-* alternation and looks at how it is the *bi-/yi-* pronouns are to be interpreted when they are present in a sentence.

The focus of research on *bi-/yi-* as one of interpretation of grammatical relations and thematic relations is one that has continued to be an issue in work in Athapaskan linguistics. Sandoval (1984) looks at the syntactic function of *yi-* and *bi-* in Jicarilla Apache. He proposes that *bi-* is not a passive, but marks a transitive construction with two direct arguments, an ergative construction. *bi-* has a subject that indicates patient or goal while *yi-* has a subject that indicates agent.

3.2 Anaphora and configurationality

An area of study in Athapaskan syntax that arises directly out of the interpretation of grammatical relations solution to the *bi-/yi-* problem is that of determining coreference relationships between nouns. This topic is taken up in work by Platero (1978). As is well known, Athapaskan languages are replete with what Platero terms 'missing noun phrases,' phonetically null pronominal and anaphoric elements. Platero examines the coreference relations holding between overt noun phrase arguments and empty elements. He suggests that there are not underlying noun phrases that are deleted by rule, but instead the phonetically null argument positions are syntactically unfilled as well.

Platero poses a question in his dissertation that has become the main issue in the area of anaphora in all later work. He suggests two possible underlying representations for Navajo pronouns. First, pronouns could be unexpanded noun phrases, NP--> PRO, where PRO is phonetically null. In this case, Navajo coreference facts are accounted for easily by principles of grammar proposed at the time. An alternative proposal supported by Platero is that missing arguments on the surface do not correspond to unexpanded noun phrase nodes in the underlying representation, but instead the noun phrase itself is missing in the underlying representation. These two positions are illustrated in (21) for an intransitive sentence such as 's/he is crying.'

- | | |
|---|---------------------------------|
| (21) underlying NP
S
/ \
NP VP | no NP underlying
S

V |
|---|---------------------------------|

The second possibility proposed by Platero, that the noun phrase is actually missing in the underlying representation of the sentence, is taken up by Hale. Hale (1983), in an examination of the Australian language Warlpiri, proposes a typology of languages. Languages can be characterized as

configurational or nonconfigurational. Nonconfigurational languages are characterized by several properties: free word order, null anaphora, lack of expletive elements. Hale (1983) states that while Navajo lacks free word order, it is nevertheless the paradigm case of a nonconfigurational language.

Two separate notions of configurationality have been used in the literature. One involves the status of missing noun phrases and the second the existence of a verb phrase constituent. The second of these, whether there is a verb phrase constituent, is examined in Rice (this volume). She suggests that phonological evidence in one Slave dialect suggests the existence of a verb phrase constituent. The status of missing noun phrases has become a topic of major concern in the Athapaskan literature and this topic is explored in some of the papers in this volume. Sandoval and Jelinek (this volume), following earlier work by Jelinek (1984) and Sandoval (1984), argue that Apache is a language where the minimal sentence consists structurally only of a verb. They suggest that noun phrases present in a sentence are not actually arguments of the verb; all arguments are part of the verb word. Instead, noun phrases are adjuncts that simply get coindexed with the arguments present in the verb word. The nature of the coindexing is determined by the presence of *bi-* or *yi-* as described in the outline of Sandoval's work above. This position is also taken by Willie in her paper in this volume. She explores relative clause structures in Navajo and looks at how grammatical relations in sentences with relative clauses are determined. Saxon (this volume) argues on the other hand that the missing noun phrases are present structurally at the level of underlying representation in Slave. She suggests that noun phrases are arguments of the verb rather than adjuncts. Her argument is based on the fact that there are two classes of *wh-* items in Slave which pattern in different ways. If one class is arguments and the other adjuncts, the difference in their patterning is well accounted for. Speas (1986) examines the notion of configurationality in Navajo. She suggests that Jelinek's proposal that overt

nominals are adjuncts and that pronominal clitics are arguments requires modification. The distinction between the languages that Jelinek argues have noun phrases as adjuncts and those with noun phrases as arguments is, Speas suggests, whether theta roles such as agent, theme, and location that are assigned to nouns are discharged in the lexicon or in the syntax. All noun phrases are thus arguments. In some languages (configurational), theta roles of nouns are assigned directly, while in other languages (nonconfigurational), theta roles of nouns are assigned by coindexing with the pronominal that has already been assigned a theta role. Speas thus argues that noun phrases must be syntactically arguments, as does Saxon, but that the theta roles associated with these noun phrases are not assigned directly, as do Sandoval and Jelinek.

The study of anaphora has thus been of importance in the Athapaskan literature for some time but is an area where much remains to be done.

3.3 Relative clauses

Another area that is somewhat related to the study of anaphora is that of syntactic structure. Platero (1974, 1978) looks at the structure of Navajo relative clauses. He proposes that Navajo relative clauses are right-headed even though the head noun seldom appears in this position; relative clauses are generally internally-headed. Relative clause structures led Platero, and following him Hale, to the claim that Navajo is nonconfigurational. Speas (1986) also takes up this topic, suggesting that relative clauses have what has been termed an 'across the board' structure. She shows that relative clause constructions are interpreted as if the matrix and relative clause were parallel in some way. She claims that the nonconfigurational approach is not able to account for this parallelism, and proposes that relative clauses are interpreted as two independent clauses rather than as an embedded structure.

A different aspect of relative clauses, the structure of an internally-headed relative clause at the level of logical form, is examined in the paper by Barss, Hale, Perkins, and Speas in this volume. They propose that the logical form of such relative clauses is derived by movement of the relative NP rightward out of the relative clause itself.

3.4 Direct and indirect discourse

A further topic of interest in Athapaskan syntax is the distinction between verbs that take a direct discourse complement and those that require an indirect discourse complement. Schaubert (1975) shows that a class of direct discourse-determining verbs can be distinguished from the indirect discourse-determining verbs on several grounds, including the determination of point of view of interpretation of the subordinate clause. While with an indirect discourse-determining verb in the matrix clause, the lower clause is interpreted from the point of view of the speaker, with a direct discourse-determining verb in the matrix, the lower clause is interpreted from the point of view of the subject of the matrix. This can be seen in the following sentences. The first sentence contains an indirect discourse-determining verb and the second a direct discourse-determining verb.

- (22) Bíl béégashii yidoolohígíí Mary bíł bééhózin
 cow 3 F.rope.3.COMP 3.with 3.be known
 Mary knows that Bill will rope a cow
 Bíl béégashii deeshłoh nízín
 cow 1 F.rope 3 3.think
 Bill_i thinks that he_i will rope a cow
 (F = future, COMP = complementizer)

In the first sentence, the complement verb 'rope' is third person and is not coreferential with the matrix subject, while in the second sentence the complement verb 'rope' is first

person and is coreferential with the matrix subject. In both cases, this verb has the subject 'Bill.' In addition to this difference, sentences embedded under a direct discourse verb take a complementizer, *ígíí* in the sentence above. Sentences embedded under a direct discourse verb never take a complementizer; the second sentence above would be ungrammatical if the embedded clause (with the verb 'rope') were marked by a complementizer. Also correlated with the difference between verbs taking direct and indirect discourse is a difference in formation of direct questions. Schauber shows that with direct discourse-determining verbs, question words move out of the complement sentence in order to escape from the scope of the direct discourse-determining verb. With indirect discourse-determining verbs, no such movement takes place. Rice (1986) shows that direct and indirect discourse-determining verbs have similar properties in Slave. She suggests that these properties follow from a structural difference between complements required by direct discourse-determining verbs and those required by indirect discourse determining verbs. Saxon (1985a, 1985b) finds that these two classes of verbs also exist in Dogrib. She suggests that in addition to direct discourse interpretation and indirect discourse interpretation, there is a mixed discourse interpretation when reflexive pronouns are involved. In a sentence such as (22), the subject pronoun of the complement clause receives a direct discourse interpretation while the reflexive pronoun receives an indirect discourse interpretation.

- (22) Mary [*ʔedecháa* *ts'àwehtla*] *niwə*
 reflexive.grandchild 1sg. opt. visit 3 imp. want
 'Mary_i wants to visit her_i grandchild_i.'

The first person singular complement subject is coreferential with the main clause subject. The reflexive pronoun is generally used with the object only when the subject is third person, but in this case, the subject is first person. Saxon

suggests that this marked device is used to disambiguate an otherwise ambiguous sentence.

4. Synchronic studies - discourse structure

The area of discourse analysis is probably the least studied area in Athapaskan grammar. The research in this area is well represented by McCreedy's contribution to this volume. This paper grows out of her dissertation (1983), a study of reference, cohesion, and style in three genres of Navajo texts. She shows that cohesion (intersentential referential continuity) and discourse structure (structural aspects) are related in a principled way across a stylistic continuum. In planned, ritual and formal speech, discourse structure is the more important factor in text unity. In more unplanned speech, cohesion operates independently of discourse structure, with cohesion being more important. Cohesion is indicated by the linking of chains of pronouns, where the pronouns are ranked with the highest ranked referring to prominent characters and the lowest for characters of diminished importance. The classifiers, McCreedy claims, function at the discourse level to indicate which verbal argument is focussed on.

Scollon and Scollon (1979), in their work on ethnography of speech, have also looked at Athapaskan discourse structure. They too examine the structure of an Athapaskan narrative, in this case Chipewyan, and suggest that the structure of this narrative is sensitive to the performance situation. In other work, Scollon (1977) looks at particles that have discourse functions in Chipewyan.

The most basic questions about Athapaskan discourse structure remain to be answered. The topics addressed by McCreedy, reference, cohesion, and style, all remain worthy of far greater attention in Athapaskan languages.

5. Organization

The volume is organized by topic, with topics appearing in the following order: phonetics (Story on Beaver vowels), phonology and morphology (Story on Carrier tone, Cook on Chilcotin verb paradigms, Hargus on the future in Sekani, Rice on tone in Fort Nelson Slave, Rice and Hargus on conjugation and mode in Sekani and Slave), syntax and logical form (Barss, Hale, Perkins, and Speas on logical form in Navajo, Sandoval and Jelinek on *yi-/bi-* in Apache, Saxon on configurationality in Slave, Willie on Navajo relative clauses), discourse (McCreedy on Navajo), comparative/historical (Story on the first person duoplural), ethnolinguistics (Kari on Ahtna), and categories, in particular directionals (Leer).

Notes

1. Sapir created the term 'Na-Dene', of which *na* means 'to live; house' in Haida and 'people' in Tlingit, and *dene* (and its cognates) means 'person' in Athapaskan.
2. Krauss (1964) postulated this series for the PA system, but from Krauss (1973) and elsewhere it is clear that the $*k^w$ series was for PAE, which developed into the PA $*tʃ^w$ series.
3. Kingston (1985) interprets $*\tilde{y}$ ($=*ŋ$) as a 'nasalized syllabic' without supporting evidence.
4. In many Athapaskan languages, a glottal stop appears following a word-final marked tone vowel. Both Hargus (1985) and Rice (forthcoming) treat the final glottal stop as redundant since it is predictable from the marked stem

tone. An alternative treatment would be to treat the final glottal stop as underlying, with synchronic vowel constriction producing the marked tone on the vowel. In these languages, tone does not appear to be predictable from a syllable-final glottal stop elsewhere, and therefore seems to be best treated as phonemic.

5. Cook's criticism of the phonemic status of the constricted vowel appears to be misunderstood by some (see Kingston 1985:26), and it should be emphasized here that he does not deny the phonetic reality of the constricted vowel. What was questioned by Cook is the phonological status of the constricted vowel, i.e. were there constricted vowel phonemes vis-à-vis nonconstricted vowels in the PA phonemic inventory?
6. Kingston (1985) apparently interprets the representations in question as a unit phoneme, 'glottalic sonorants'.
7. This assumption also applies to fricatives, but our comments will be restricted to sonorants.
8. Since [e] is phonemic, the alternation is a phonemic (not phonetic) alternation between ə and e, and the prefix may be written as *se-* (see Cook 1983).
9. The stems are presented in the order imperfective, perfective, optative. When a single stem is given, it is the imperfective form. The material in parentheses shows the form of the prefix in 'conjugation position' in the imperfective and perfective. Each verb theme requires a particular conjugation marker. Derivational prefixes can also select conjugation markers; hence, the change in conjugation indicated in some of the examples of verb bases given.
10. Actually the verb theme. See section 2.4.1 for discussion.

11. See section 2.6 for discussion of these terms.
12. The labels S1, S2, etc. refer essentially to the aspects (e.g. momentaneous, semelfactive, etc.) in which the verb stem can occur. Each of the categories may include more than one aspect.
13. See below for discussion of the notion of control.
14. This base includes the prefix *de-* 'benefactive, for oneself,' which requires the *d-* classifier.
15. The term classifier continues to be used in the Athapaskan literature, but, as pointed out by Krauss (1969) and many others subsequently, this term is a misnomer. The morphemes in this position actually indicate voice more often than not.
16. Stanley (1969) proposes additional boundary types for Navajo.

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Problems of Phonemic Representation in Beaver

Gillian Story

In this paper, a phonemic study is made of the Beaver dialect spoken on the Doig River reserve, north of Fort St John, northeast British Columbia.¹

Certain problems of phonemic representation arise. These involve phonetic quantities which, though contrastive, are infrequently occurring and are of limited distribution.

The first part of the paper describes the major features of Doig Beaver phonemics leaving aside the problem areas. The second part takes up these problem areas and presents some solution to them.

It is not the purpose of this paper to present a full diachronic phonological study of Beaver. However, the main outlines of the relationship between the Proto-Athapaskan (PA) phonemes and the Beaver reflexes are given in the first part.

1. Consonant and vowel phonemes

The main outlines of the vowel system are the most pertinent to the second part of this paper; however, certain features of the consonant system are of interest in that they may be relevant to an areal study of Athapaskan.

1.1 Consonant phonemes

The consonant system is presented in table 1.

Table 1

b	d	dl	dž	dz	dž	g	ʔ
	t	tɬ	tš	ts	tš	k	
	t'	tɬ'	tš'	ts'	tš'	k'	
		ɬ	š	s	š	(x)	h
		l	ž	z	ž	ɣ	
m	n				y	w	

The consonants comprise the obstruents, the laryngeals (ʔ, *h*), and the sonorants, that is, the nasals (*m*, *n*), and the semivowels (*y*, *w*).

1.1.1 The obstruent system

The obstruents comprise three stop or affricate manners, plain (nonaspirated, nonglottalized), aspirated, and glottalized, and two fricative manners, voiceless and voiced. The stops and affricates are typically voiceless, the nonglottalized contrasting as plain versus aspirated rather than voiced versus voiceless, but for convenience, and in accordance with general Athapaskan usage, voiced and voiceless symbols are used to represent the plain and aspirated phonemes respectively.

Word-finally there is neutralization between voiced and voiceless fricatives and between plain and aspirated stops and affricates. Since the word-final fricatives are phonetically voiceless, they are assigned to the voiceless members of their respective series. Under suffixation, stem-final voiceless fricatives occur intervocally and, excepting *h* (at this point including *h* with the obstruents), become the voiced fricative member of their respective series. Similarly, stem-final stops and affricates occur intervocally under suffixation. Paralleling the word-final fricatives, the word-

final stops and affricates have been assigned to the aspirated members of their respective series and not to the plain members² (when the stem is suffixed, the stem-final feature [+fortis], say, becomes [-fortis] in either case).

Obstruents occurring word-finally, then, are the aspirated stops and affricates and the voiceless fricatives *t̚*, *ʃ̚*, *s̚*, *ʂ̚*, *h* (not *x*). Word-finally, *ʃ̚* occurs following reduced stem vowels only and the reflex of PA **x* following full vowels is *h* (merged with the reflex of PA **ɣ*). *n* also occurs word-finally following reduced stem vowels only.

Medially, syllable finals are *ʃ̚*, *s̚*, *h*, and also *ʂ̚* (in other words, there is neutralization between voiced and voiceless fricatives syllable-finally). In nouns, *ʃ̚* occurs syllable-finally preceding an immediately following velar, a case probably of assimilation *s* > *ʃ̚*. In verbs, *s* > *ʃ̚* syllable-finally in first person singular forms when the stem final is a member of the *t̚ʃ̚*-series (but not when the stem initial is). The classifier **t̚* has become *h*. These syllable finals occur only immediately before a stem. There are a few exceptional cases of noun stems of the form *CVSde* where *S* is *s* or *ʃ̚*: *dʒusde* 'snipe', *wʌtadʒiʃ̚de* 'chipmunk'.

Stops occur at the bilabial, alveolar, and velar points of articulation. These are the reflexes of PA **w*, members of the PA **t*-series, and of the PA **q*-series respectively. Beaver *d*, in addition to being the reflex of PA **d*, is the stem-initial reflex of PA **n* except when the stem final is a reflex of **n*. Affricates are lateral, postdental, alveolar, and alveopalatal, the last three being sibilant. These are the reflexes of members of the PA **t̚t̚*-series, **ts*-series, the merged **t̚ʃ̚*- and **t̚ʂ̚*-series, and the **k*-series respectively. Beaver *dʒ̚*, *t̚ʃ̚*, *t̚ʂ̚* include the stem-initial palatalized reflexes of **d* (and **n*), **t*, **t̚* respectively before reflexes of **u*, **i*, **e*.

The plain stops and affricates are *b, d, dl, d̥, dz, dž, g*. Examples are *bes* 'knife', *dΛt* 'blood', *dl̥e* 'mouse', *d̥ene* 'day', *dzéh* 'gum', *nedžit* 'he's scared', *gah* 'rabbit'. *d̥* is not the expected stem initial in 'day' but is probably a case of early assimilation in the reflex of PA **d̥ʷe-n-ge-tsə* 'day-long'; Northern Alberta Slavey 'day' has the corresponding *d̥* as stem initial (p.c. Patrick Moore).

The aspirated stops and affricates are *t, t̥, t̥s, ts, t̥ʃ, k*. Examples are *sΛtáʔ* 'my father', *t̥t̥žá* 'dog', *t̥se* 'pipe, stone', *tsáʔ* 'beaver', *mΛt̥séʔ* 'its tail', *ke* 'shoe'.

The glottalized stops and affricates are *t', t̥', t̥s', ts', t̥ʃ', k'*. Examples are *ʔΛt'ôʔ* 'leaf', *t̥'ut* 'rope', *t̥'sih* 'mosquito', *ts'áde* 'blanket', *t̥ʃ'óné* 'coyote', *k'Λt* 'willow'. An example which gives *t̥ʃ'* (in this case from *t'* palatalized before *e*) in a more widely known Athapaskan stem is *Λt̥ʃ'e* 'girl'.

Fricatives occur which are lateral, postdental, alveolar, alveopalatal, and velar. The voiceless fricatives are *ɬ, ɬ̥, s, ʃ, x*. Examples are *ɬuge* 'fish', *ɬ̥Λn* 'star', *sΛs* 'brown bear', *ʃɬn* 'song', *nΛx̥e* 'you duoplural', *xΛda* 'moose'. Syllable-finally, *ɬ* occurs only word-finally; *x* occurs only syllable-initially. *ʃ* is generally the reflex of **x* but also stem-initially may be morphophonemically equivalent to *sy* (in first person singular forms of *ya* 'sg. goes' and other *y*-initial stems); stem- and/or word-finally it occurs following reduced vowels only. Stem-initially in first person singular forms *ɬ̥, s* may be morphophonemically equivalent to *st̥* and *sts* respectively, but *st̥* does not reduce to *ʃ* similarly. Examples of these processes are:

<i>sy</i> > <i>š</i>	<i>dΔša</i>	'I start'
	<i>nqšásə</i>	'I'll arrive back'
	<i>naγΔšΔt</i>	'I'm coming across'
<i>stš</i> > <i>š</i>	<i>nΔšvk</i>	'I'm scraping it'
<i>sts</i> > <i>s</i>	<i>wasΔnesə</i>	'I'll smell it'
<i>stš</i>	no reduction	

In some nominal words, the reduction *stš* > *š* does occur: *Δšɪdlə* < *Δstšɪdlə* 'my younger brother', *Δše* < *Δstše* 'my grandchild', *hʊšvk* < *hʊstšvk* 'big thorn.'

x is further discussed below in conjunction with *h*.

The voiced fricatives are *l*, *ʒ*, *z*, *ʒ*, *γ*. Examples are *sɛláʔ* 'my hand', *sΔʒáʔ* 'my mouth', *sΔzíʔ* 'my body', *déhža* 'he has started to go', *mΔγáʔ* 'its fur', *γΔda* 'he is alive'. Stem-initially, *ʒ* is either the reflex of **ɣ* or **y* in which case it fluctuates with *y*, or it is morphophonemically equivalent to *šy* (< **zy*), or *sdž* (in first person singular forms of *D*-ya 'sg goes back'). In addition, *hž* is morphophonemically equivalent to *šdž* (in the *D*-class *š*-perfective third person of the stem *ya* 'sg goes'). Examples of these processes are:

<i>šy</i> > <i>ž</i>	<i>nádéža</i>	'he started across'
	<i>néžq</i>	'it has grown up'
<i>sdž</i> > <i>ž</i>	<i>nqšΔža</i>	'I returned across'
	<i>hódeža</i>	'I went outside again'
<i>šdž</i> > <i>hž</i>	<i>nqđéhža</i>	'he started back across'
	<i>néhža</i> (< <i>nadéhža</i>)	'he started back'
	<i>nɪnéhža</i>	'he became stuck'

Stem-initially in first person singular forms, \hat{z} , z may be morphophonemically equivalent to $sd\hat{z}$ and sdz respectively, but $sd\check{z}$ does not reduce to \check{z} similarly. Examples of these processes are:

$sd\hat{z} > \hat{z}$	$n\Delta\hat{z}\acute{e}\hat{s}$	'I am tall'
$sdz > z$	$n\acute{a}z\Delta t$	'I hunt'
$sd\check{z}$	no reduction	

s immediately preceding a stem-initial glottalized affricate may reduce to $S?$, where S is \hat{s} , s , depending on whether the underlying stem initial is $t\hat{s}'$, ts' respectively. The following reductions have been recorded:

$st\hat{s}' > \hat{s}?$	$t'e\hat{s}'it$	'I am dying'
	$n\acute{a}de\hat{s}'\Delta t$	'I am falling'
$sts' > s?$	$w\Delta s'it$	'I tell a lie'
$st\check{s}'$	no reduction	

In the preceding paragraphs, certain reductions in verbs with s (first person singular subject) and an immediately following stem-initial sibilant affricate have been described. s and an affricate member of the $t\hat{s}$ -series or ts -series reduce; s and an affricate member of the $t\check{s}$ -series do not (unless, as illustrated, the affricate is the output of s -Dya where ya is the verb stem 'sg. goes').

\hat{s} and an immediately following stem-initial sibilant affricate (in the 'deictic' persons³ of zero- and D-class \hat{s} -perfectives) do not reduce as a general rule; for example, $ts'\Delta n\acute{e}\hat{s}t\check{s}ets$ 'we went to sleep', $n\acute{o}y\Delta\hat{s}d\check{z}et\check{t}$ 'they returned across'. Any reductions of this type that have been recorded

appear to be exceptional; for example, $\text{ʔ}\Delta\check{s}\text{ʔ} < \text{ʔ}\Delta\hat{s}t\check{s}'\text{ʔ}$ 'he shot.'

Although consonant clusters comprising *s* and an affricate member of the *tš*-series or *š* and a sibilant affricate may occur, there are certain restrictions on occurrences of members of the *tš*-, *ts*- and *tš*-series stem-initially and stem-finally. There is no restriction on the co-occurrence of members of the same series within the stem. In PA there are certain restrictions on co-occurrences of members of the **ts*-, **tš*-, and **tš^w*-series stem-initially and finally (Krauss 1964) so that in Beaver there are no co-occurrences of members of the *tš*- and the *ts*-series in stems.

In addition, members of the *tš*-series assimilate with respect to point of articulation to any member of the *tš*-series, stem-initially or stem-finally, when members of these two series co-occur; for example, $t\check{s}u\hat{s} > t\hat{s}u\hat{s}$ 'handle fabric', ($*ne\text{ʔ}s > d\acute{e}s >$) $d\check{z}\acute{e}\hat{s} > d\hat{z}\acute{e}\hat{s}$ 'be long, tall', $\acute{s}\acute{i}\hat{s} > \hat{s}\acute{i}\hat{s}$ 'mountain', $t\hat{s}'\Delta t\check{s} > t\hat{s}'\Delta t\hat{s}$ 'sg. fall Usitative', $t\hat{s}it\check{s} > t\hat{s}it\hat{s}$ 'sg/dl eat'. Similarly, a stem-final member of the *tš*-series assimilates with respect to point of articulation a member of the *ts*-series, but assimilation does not generally occur if the positions are reversed; for example, $z\acute{i}t\check{s} > z\acute{i}ts$ 'shout Usitative', but $t\check{s}\acute{e}s$ (not $ts\acute{e}s$) 'pl. sleep'. $t\check{s}us > t\check{s}u\check{s}$ 'feathers' is a contrary example (of assimilation when assimilation is not expected -- the rounded vowel may account for the assimilation).

In summary, then, assimilation is to a member of the *tš*-series, or, in the absence of a member of the *tš*-series to the stem initial.

Assimilation also occurs within the verb-prefix string. Assimilation is generally to the rightmost sibilant and the two commonly-occurring assimilations are in the first person

singular and exclusive first person duoplural of \hat{s} -perfectives; that is, $\hat{s}\Delta s > s\Delta s$ and $ts'\Delta\hat{s} > t\hat{s}'\Delta\hat{s}$.

Assimilation may also occur between prefix string and stem but the only assimilation of this type which seems to occur regularly is of s (first person singular) to the point of articulation of a stem-final member of the $t\hat{s}$ -series; for example $?\Delta d\Delta \hat{s}t\hat{t}'\acute{t}\hat{s}$ 'I'm writing', $d\Delta \hat{s}k\Delta \hat{s}$ 'I'm dark'. Examples of nonassimilation between prefix string and stem are $n\acute{a}t\hat{s}'\Delta\hat{s}?\acute{a}ts$ 'we two came across', $t\acute{e}?\Delta st'\acute{a}\hat{s}$ 'I'm cutting something in two'.

1.1.2 The laryngeal system

The laryngeals are $?$, reflex of PA $*?$, and h . Examples of $?$ and h , and of x , are: $s\Delta dz\acute{e}h\acute{e}?$ 'my gum', $s\Delta ?\acute{a}h\acute{e}?$ 'my snowshoe', $h\Delta t\acute{a}?$ or $x\Delta t\acute{a}?$ 'our father', $n\Delta x\Delta t\acute{a}?$ 'your dpl father', $ts'\acute{t}dah$ 'baby', $x\Delta da$ 'moose', $\acute{z}ex\acute{e}$ 'I killed it'.

$?$ occurs stem-initially and stem-finally. Examples are $?\Delta t$ 'spruce boughs', $?\acute{a}h$ 'snowshoe', $n\acute{o}\hat{s}?\acute{t}$ 'bridge', $?\Delta t'\acute{o}?$ 'leaf', $n\Delta t\hat{s}\acute{a}?$ 'it's big'. It also occurs in prefix strings: $?\Delta d\Delta t\hat{s}'\acute{e}\hat{s}$ 'he cooks for himself', $t\acute{e}?\Delta st'\acute{a}\hat{s}$ 'I'm cutting something in two'.

As seen above, $?$ may also occur stem-initially in reductions of first person singular s preceding stem-initial $t\hat{s}'$ or ts' .

Beaver is a high-marked language; that is, the reflexes of early PA $*V?$ are vowels carrying high tone. (More generally, constricted vowels in late PA have vowel reflexes carrying high tone in Beaver; see Krauss 1978.) There is overt realization of stem-final $?$ co-occurring with the high tone reflex; similarly, the reflex of the PA $*\acute{e}?$ possessive suffix is $\acute{e}?$.

h occurs most frequently syllable-finally. Word- and stem-finally it is the merged reflex of **x* (following full stem vowels) and of **ɣ*. As pointed out, when an *h*-final stem is suffixed, *h* does not voice intervocalically. This is explicable if *h* is a member of the laryngeal system. Word-medially, syllable-final *h* is generally the reflex of **ɬ*.

Syllable-initially, *h* is the reflex of **ɣ*. *x* occurs generally before unrounded vowels and *h* before rounded. *x* has not been recorded before rounded vowels. However, *x* is marginally contrastive with *h*. Generally, *x* occurs initially to stems, especially verb stems. In prefixes, some contrasts seem to be maintained: *xatʃe* 'first', *hak'a* 'more'; *xestɬ'a* *he* 'the last', *he* 'very', though in many cases fluctuation occurs. In the speech of younger persons, all *x* become *h*.

ʔ and *h* are the only consonants that may occur syllable-finally in positions other than immediately before the stem; for example, *tʃeʔɣʌdlɪh* 'they pray', *dahwehtʃʌʃ* 'dance'. These two words also exemplify a rule $\Delta > e / __ HC$, where *H* is a (syllable-final) laryngeal, which applies in prefix strings; a further example is *ɣʌhtʃʌn* > *yehtʃʌn* 'he smells it'. $\Delta > e$ also when a possessive prefix *Cʌ* occurs before a ʔ-initial stem or when a possessive prefix *Cʌ* occurs immediately before the possessive prefix ʔʌ in a case of double possession, and in this latter case the reduced vowel of the second possessive prefix also becomes the full vowel *e*; for example, *seʔuʃáʔ* 'my pot', *seʔek'aéʔ* 'my (pig's) fat'. Note also the historical process **ə* > *e* / $__ ʔ$ in the possessive suffix *éʔ*.

1.1.3 The sonorant system

The nasal sonorants *m* and *n* are the reflexes of PA **w* and of PA **n* respectively. Beaver is not a language which provides evidence for **ŋ* or **m* which in Beaver merge with **n*. (See

Krauss and Leer 1981, Cook 1981 for PA **ɣ* and **m*.)

There is a split in the reflexes of PA **w*. In the absence of a reflex of **n* in the stem final, the reflex of **w* stem-initially is *b*. In other environments (stem-initially when the stem final does not contain a reflex of **n* and in prefixes), the reflex of **w* is *b*. Examples of *m* are *mět* 'snare', *męge ~ mige* 'lake', *tadehmΛn* 'I filled it up', *mΛkéʔ* 'his foot'.

There is a split also in the reflexes of PA **n*. In the absence of a reflex of **n* in the stem final, the reflex of **n* stem-initially is *d* (or *dž* by palatalization). In other environments (stem-initially when the stem final does not contain a reflex of **n*, stem-finally, and in prefixes), the reflex of **n* is *n*. There are no medial syllable-final occurrences of *n*. Word-finally and/or stem-finally, *n* occurs following reduced stem vowels only. Examples of *n* are *nΛn* 'earth', *kún* 'fire', *šin* 'song', *nóda* 'lynx', *nΛkéʔ* 'your foot', *nΛtsÁdle* 'it's small', *néžq* 'it's grown'.

The semivowel sonorant *y* is the merged reflex of PA **ɣ* and **y*. Except in those cases in which (*h*)*ž* is morphophonemically complex, *y* may fluctuate with *ž* stem-initially. Examples of *y* are *yúʔ* 'medicine', *yáʔ* 'louse', *dléye* 'grizzly', *džeyq* 'bull moose'.

w is the reflex of PA **ɣ*^w (or in other words of PA **ɣ* immediately preceding **ʊ*). Stem-initially, it may fluctuate with *ɣ*^w for older speakers. *w* is discussed in section 2 in conjunction with labialized velars.

1.2 Vowel phonemes

The vowel system is presented in table 2.

Table 2

i	u
ɪ	ʊ
e, ɛ	(o), ɔ
Λ	
a	

There are five non-nasalized full vowels *i*, *e*, *a*, *o*, and *u*, and three non-nasalized reduced vowels *ɪ*, *Λ*, and *ʊ*. In general, the reduced vowels are the reflexes of the PA reduced vowels and the remaining vowels, non-nasalized and nasalized, of the PA full vowels.

The non-nasalized full vowels are *i*, *e*, *a*, *o*, and *u*. *i*, *e*, *a*, *u* are the regular reflexes of the PA full vowels **i*, **e*, **a*, **u* respectively. Examples are:

i -*tšítʔ* 'head', *sɛdžítʔ* 'my mind', *tš'ih* 'mosquito', -*ts'ít* 'tell lie';

e -*kéʔ* 'foot', *tše* 'stone; pipe', -*tšéʔ* 'tail', *džeł* 'crane';

a *yáʔ* 'louse', -*táʔ* 'father', *sa* 'sun', *bát* 'mitten';

u *tšu* 'water', *džu* 'island', *tł'uł* 'rope', *ługe* 'fish'.

o is a rare phoneme. It is discussed in section 2.

A number of the above examples illustrate palatalization of one of the alveolar stops *d*, *t*, *t'* before a reflex of PA **i*, **e*, or **u*; namely, *sɛdžítʔ*, -*tšéʔ*, *džeł*, *tšu*, and *džu*.

The nasalized vowels⁴ are *ɛ̃* and *õ*, the merged reflexes in stems of PA **in* and **en*, and of **an* and **un* respectively. Examples are:

ɛ̃ *tʰɛ̃tʃuk* 'horse', *sɛ̃* 'I, me', *mɛ̃ge* (~*mɪge*) 'lake', *ʔʌɣɛ̃ʔ* 'grease', *ʔʌɣɛ̃zéʔ* 'egg', *tʃɛ̃tʃ* 'axe', *mɛ̃tʃ* 'snare';
õ *ʔʌtʰõʔ* 'leaf', *-dɔ̃* 'lip', *tʃɔ̃* 'rain', *-tʃõgéʔ* 'rib', *sɔ̃ge* 'mother's sister (term of address)', *-tsɔ̃* 'grandmother', *-dʒɔ̃* 'good'.

The alveolar stops palatalize before reflexes of PA **in* and **en*; for example, *-tʃɛ̃tʃ* 'handle sticklike object Progressive'.

The (non-nasalized) reduced vowels are *ɪ*, *ʌ*, *ʊ* of which *ʌ* is the merged reflex of PA **ə*, **ʌ*, and *ʊ* is the reflex of PA **u*. *ɪ* is the reflex of PA **ə* in certain environments, and also in certain contexts is the reduced counterpart of *e*, in stem ablauts or in secondary reductions of a full vowel. *e*, if denasalized, becomes *ɪ*; for example, *mɛ̃ge* ~ *mɪge* 'lake', *dʒɪge* 'ground'. Examples of *ɪ*, *ʌ* occur in:

ɪ *tíʃ* 'crutch', *-ʒíʃ* 'hide', *ʃɪn* 'song', *ʌʃɪdle* 'younger brother', *dʒɪge* 'ground', *-dʒɪt* 'scared; rotting', *dʌtʃɪn* 'wood', *ʃíʃ* 'hill', *tʃɪtʃ* 'duck', *ʔʌdɪʃtʃ'ís* 'paper';
ʌ *ʃʌn* 'star', *ʔʌtʃʌn* 'meat', *ʌʃtʌne* 'ice', *-tsʌk* 'cry', *-dzʌgéʔ* 'ear', *tʌt* 'smoke', *-ʒʌt* 'liver', *-ts'ʌt* 'scratch', *nʌn* 'earth', *ʔʌtʃ* 'spruce boughs'.

ɪ and *ʌ* contrast in the following pairs: *-díʃ* 'pl go Prog', *dʌtʃ* 'blood'; *-díʃ* 'pl go Usit', *-dʌtʃ* 'sg go back Usit'; *wʌtʃ'ís*

'dust', *-lʌts* 'urine'; *-tʰʷtʃ* 'sg dance', *-tʰʌtʃ* 'splash'; *-zʷts* 'shout', *tsʌts* 'firewood'; *-ʃʷtʰ* 'chop P', *-ʃʌtʰ* 'I go Progressive'; *-tʃʷtʃ* 'sg/dl eat I', *-tʃʷʌtʃ* 'sg fall Usitative'.

The distribution of *ʷ* will be described in some detail. A study was made of the historical and morphophonemic sources of *ʷ* since its independent phonemic status depends on relatively few forms, at least if only nouns are considered. (1) PA **ə* becomes *ʷ* immediately following a member of the PA **k*-series or **y*; for example, *dʌtʃʷn* 'wood', *-dʒʷn* 'sing', *ʌʃʷdle* 'younger brother', *-tʃʷldeʔ* 'ligament'; and immediately preceding a member of the PA **ts*-series in noun stems (not in verb stems); for example, *tʃʷ* 'crutch', *-zʷ* 'hide', *ʃʷ* 'hill', *tʃʷtʃ* 'duck', *ʃʷʃe* 'my father-in-law', often with assimilation of *ʷ* to an immediately following consonant with respect to point of articulation as in the last three of the examples given. Note that word-initial **ə* does not become *ʷ*; for example, *ʌʃʷʌne* 'ice', *ʌʃʷe* 'trousers'; compare *ʃʷʃeʔ* 'my trousers'. Exceptions arise when the immediately preceding consonant is velar; for example, *xʌʃʷ* 'pus', *-ɣʌdʒʷeʔ* 'shoulder'. In verb stems, PA **ə* becomes *ʌ* immediately preceding a member of the **ts*-series. PA **ə* immediately following a member of the PA **ts*-series (in noun and verb stems) becomes *ʌ*, not *ʷ*; for example, *ʃʷʌn* 'star', *-tʃʷʌneʔ* 'bone', *ʔʌtʃʷʌn* 'meat', and PA **ə* immediately preceding a member of the PA **k*-series becomes *i*, except when the immediately preceding consonant is velar; for example, *kʷiʃ* 'birch', not *kʷih*.

(2) In PA, in verb stems in which full stem vowels alternate with reduced stem vowels, PA **ə* is the reduced vowel corresponding to both of the full vowels PA **i* and PA **e*. In Beaver, in stem sets in which a reflex of **ə* alternates with a

reflex of $*e$, the reflex of $*ə$ in usitative and progressive stems is ι ; for example, $-t\hat{s}\iota t\hat{s}$ 'sg/dl eat Usitative' (compare Chipewyan imperfective $-t\theta\epsilon r$); $-d\acute{\iota}t$, $-d\acute{\iota}(t)\check{s}$ 'pl go Progressive/Usitative' (compare Beaver imperfective $-d\acute{e}t$); $-k\acute{\iota}t\check{s}$ 'pl fall Usitative' (compare Sarcee usitative $-k\grave{a}t\check{s}$). However, if the full vowel is $*i$, the reflex of $*ə$ is Λ ; for example, $-\hat{s}\Lambda t\hat{s}$ 'pl dance', $-t\hat{s}\Lambda t\hat{s}$ 'sg/dl fall Usit', $-\hat{z}\Lambda t\hat{s}$ 'think Usitative'. Λ is also the reflex of $*\alpha$ in stem sets in which the reduced vowel $*\alpha$ alternates with the full vowel $*a$.

(3) ι occurs in verb prefix strings (a) in the 'deictic' persons of D-class conjunct \hat{s} -perfectives in the string $C\acute{\iota}\hat{s}$ where $C\Lambda$ is a conjunct prefix (compare zero-class conjunct \hat{s} -perfectives in which the corresponding string is $C\acute{e}\hat{s}$); (b) in the inclusive first person duoplural subject prefix $\hat{s}\Lambda\text{---}\iota D$; (c) as the seriative-semelfactive prefix $\acute{\iota}$; (d) in the first person singular subject prefix string of disjunct zero-imperfectives in the string $C\iota s$ where $Ce > C\iota$ is a disjunct prefix (this is a special case of a general rule in which the vowel of a disjunct prefix occurring immediately before s , the first person singular subject prefix, is reduced).

(4) There is evidence to suggest that denasalized ϵ becomes ι ; for example, $d\acute{z}\iota ge$ ($d\acute{z}\iota\text{---} < d\acute{z}\epsilon\text{---} < d\epsilon\text{---} < n\grave{a}n\text{---}$), $ts'\acute{\iota}dah$ 'baby' (compare Chipewyan $ts'\acute{\iota}nake$, $ts'\acute{\iota}nai$ 'orphan'), $m\iota ge \sim m\epsilon ge$ 'lake', $n\acute{\iota}\text{---}$ 'terminative'.

Most occurrences of ι can be included in one of these four types.

υ has two main allophones, $[(C)^w\Lambda]$ and $[\upsilon]$. The distribution of the allophones seems to be as follows. $[\Lambda]$ occurs in open syllables following a velar syllable initial and

[ʋ] in open syllables following a nonvelar syllable initial. In closed syllables following a velar syllable initial, the presence of the labialized onglide as well as any degree of rounding in the phonetic syllable peak ([^wʌ]-[^wɔ]) is dependent upon the syllable final and the 'valence' of that syllable final with respect to rounding, [^wʌ] occurring when that valence is weak (syllable-final *n*, and members of the *t*-series and *tʃ*-series), [^wɔ] when that valence is strong (especially including syllable-final members of the Beaver *tʃ*-series and *k*-series). In closed syllables following a nonvelar syllable initial, there is no labialized onglide and the rounding is phonetically in the vowel only. The tongue height of the vowel (its nearness to [u]) is dependent upon the valence of the syllable final to rounding, [ʏ] (a rather open [ʏ]) occurring when the valence is weak and [ʊ] when the valence is strong.

Examples in which *ʋ* occurs are *kʊn* 'fire', *kʊŋ* 'cloud', *tʃʊʃ* 'feathers', *tsʊdʒe* 'flies', *tʃʊge* 'hay', *-ʔʊt* 'pl float Prog', *-gʊt* 'crawl Prog'.

2. Problems in phonemic representation

A number of phonetic segments and sequences in Doig Beaver are contrastive but are of limited frequency and distribution. The problem in phonemic representation of these quantities is to find a system which minimizes the limitations. The solution adopted is relatively abstract and introduces VV sequences of which there are none in a surface representation.

The phonetic entities to be interpreted are (1) labialized consonants; (2) vowels /æ, æ, ɛ, ɛ, o/ of limited frequency and distribution which are not the direct reflexes of any PA

vowels; and (3) front vowels with schwa-onglide /əi, əe, əɛ/. Each of /æ, æ, ɶ, ʌ/ may occur immediately preceded by a labialized consonant, or, in the case of /ʌ/, is only found in that environment. In addition, the status of /w/ as a phoneme will be reconsidered in this section and further reference be made to the phoneme /u/.

Since these quantities are contrastive, they have been enclosed in phonemic slant lines in the paragraph above. The following sets establish the contrastiveness of /æ/:

/e/ *ke* 'shoe', *nehtsʌn* 'you smell it', *dzéh* 'gum', *ʌse* 'sister's husband (term of address)';

/æ/ *tšukæ* 'rubbers', *næhdžit* 'you dpl are scared', *dʌbæh* 'sheep', *ʌsæ* 'grandfather (term of address)';

/a/ *tšihka* 'muskrat', *nahtšáʔ* 'you dpl are big', *gah* 'rabbit', *sa* 'sun'.

Examples of the nasalized counterparts of these phonemes include:

/ɛ/ *tʃɛ(tšuk)* 'horse', *k'ɛʔ* 'saskatoon';

/æ/ *kʌlæ* 'old man', *k'ædatš* 'he's walking about';

/a/ *ʌdžúlʌstš'e* 'I'm all right', *ʌhʌ* 'yes'.

/ɛ/ does not occur prelabialized. Prelabialized examples of the other phonemes include: *-tšʷéʔ* 'water (possessed)', *-tšʷæh* 'little daughter', *kʷæhʔás* 'you two come in', *ʔehtʷah* '22 shells', *tšʷæ* 'bird', *kʷæ* 'groundhog', *džežʷah* 'little bull moose'. Prelabialized /ʌ/ occurs in *kʷʌ* 'house'.

Apart from /o/, they have not been included in tables 1 and 2 of the consonant and vowel phonemes. Since their status as

unit phonemes is under discussion and some other phonemic representation of them is sought, from this point on they will be enclosed in phonetic brackets.

2.1 Labialized consonants

Labialized consonants (including /w/) occur before each of the vowels /i, e, a, ʌ/, but not before /ɛ/ or any rounded vowel (apart from the sequences /wɔ/ and /wu/). In addition, labialized consonants are found before [æ, æ, ɶ, ʌ]. Phonetically, labialized consonants appear before [ʌ] in the sense that the phoneme /ʌ/ has prelabialized allophones including [wʌ] (as described in section 1.2). In this case of allophonic variation, the labialization is assigned to the syllable nucleus so that labialized consonants do not occur before /ʌ/ (but /wʌ/ is found).

The labialized consonants that are found to occur form no natural class. An analysis in which the labialization is assigned to the syllable nucleus would circumvent the difficulty. In other words, the problem is whether to treat the labialization as part of the syllable initial or as part of the syllable nucleus. The latter type of analysis entails representing the syllables in question as /CVV(C)/ where the first /V/ represents the labialization in some way.

We shall first suggest /VV/ representations for the prelabialized front vowels.

The possessive suffix in Beaver is -éʔ. The possessed form of *tšʉ* 'water' is *-tšwéʔ* < *-tšʉ-éʔ* which suggests a /VV/ interpretation /ue/ for [we]. Other examples include *tšesʔu*, *-tšesʔuéʔ* 'gun', *dʌneyʌdu*, *-dʌneyʌduéʔ* 'wine'.

/ʌ/ is morphophonemically the reduced counterpart of /e/. Paralleling /ue/ for [we], the equivalence /uʌ/ for [wʌ] is

posited. This representation will be discussed further in section 2.7. /ui/ occurs in certain first person singular verb forms in which $Cus > Cuis$ [$C^{w_{1s}}$] where Cu represents part of a conjunct prefix string. Parallel morphophonemic processes are $Ces > Cis$, $Cas > CAs$, and $Cqs > [C^{w_{1s}}]$.

Similarly, $[wi]$ can be represented by $/ui/$ ⁵ and is exemplified in *guiyéhdži* 'he said to them' in which *gui* [g^{wi}] is an allomorph of *gu* occurring before *ye*.

The remaining prelabialized vowels for which a representation is to be found are $[w_a, w_{\bar{a}}, w_{\bar{æ}}, w_{\bar{æ}}]$ (and $[w_{\Delta}, w_{\bar{\Delta}}]$). These will be considered in conjunction with representations for $[a, \bar{a}, \bar{æ}]$.

2.2 Representation of extrasystemic vowels

Two approaches to the problem of phonemic representation of the extrasystemic vowels will be examined, first an approach which gives prime consideration to synchronic morphophonemics (section 2.2.1) and then one which has for its starting point a diachronic consideration (section 2.2.2). In both cases, it is a synchronic representation of the Beaver phonemes that is sought but different solutions are suggested by the two approaches.

2.2.1 Solution in which /ea/ represents $[\bar{æ}]$

The diminutive suffix in Beaver is *ah*. The following are examples of stems with final CV(?) and their diminutives: *tsáʔ*, *tsáh* '(little) beaver', *džeyʔ*, [*džeywāh*] '(little) bull moose', *ʔAtʔʔ*, [*ʔAtʔwāh*] '(little) leaf', *ʔehtʔu*, [*ʔehtwāh*] 'shells, 22 shells', *tšêšʔu*, [*tšêšʔwāh*] 'gun, 22 rifle', *dΛbe*, [*dΛbæh*] 'mountain goat, sheep'. The morphophonemics suggest representations /*ʔa*, *ua*, *ea*/ for $[w_{\bar{a}}, w_a, \bar{æ}]$ respectively. Then,

abstracting nasalization, this representation / qa / for [wa] suggests the representation / oa / for [wa] and in that case, there is neutralization between / ua / and / oa /, both representing [wa]. Of the two, since / o / is a rare phoneme, the representation / ua / may be chosen. However, there is no nasalized phoneme / y / so that only / qa / may represent [wa] and / ya / is nonoccurring. Paralleling the representation / ea / of [æ], / $\text{ɛ}\text{a}$ / may represent [æ].

Note that in these representations, nasalization (if any) is carried phonemically by the first vowel of the / VV / sequence but is realized phonetically in the phonetic peak which in the case of the prelabialized vowels is equivalent to the second vowel of the sequence.

A sequence is phonetically reduced if its second member is reduced and full if its second member is full. To date, the example of a sequence in which the second member is reduced is / $\text{u}\text{ɪ}$ /. In the other sequences so far considered, the second member is full.

The output of fusions of two syllables across a word boundary seem to substantiate the representations / qa / and / ea / for [wa] and [æ]. Examples are $\text{ʔ}\text{Λ}\text{d}\text{q}$ *an* $\text{Λ}\text{t}\text{š}'\text{e}$ 'you love yourself' (in which $-\text{[d}\text{w}\text{a}]$ - < $-\text{d}\text{q}\text{a}-$) and $\text{s}\text{Λ}\text{d}\text{Λ}\text{lé}$ *at* $\text{š}'\text{ɛ}$ 'I'm bleeding' ($-\text{[l}\text{æ}]$ - < $-\text{le}\text{a}-$).

There are probably other diminutives among the examples for [$\text{w}\text{æ}$, $\text{w}\text{ɛ}$, æ , ɛ]; for example, [$\text{net}\text{š}\text{w}\text{æ}\text{h}$] 'a few', [$\text{ts}\text{ɪ}\text{ts}\text{w}\text{æ}\text{h}$] 'puppy', [$\text{ts}'\text{í}\text{ž}\text{w}\text{ɛ}$] 'old woman', [$\text{t}\text{š}\text{w}\text{ɛ}$] 'bird', [$\text{dl}\text{w}\text{ɛ}$] 'mouse', [$\text{k}\text{v}\text{l}\text{æ}$] 'old man'. This suggests that [$\text{w}\text{æ}$, $\text{w}\text{ɛ}$], as well as [æ , ɛ] are equivalent to / Va / for / V /s to be determined.

The same conclusion can be drawn from second person duoplural forms containing [$\text{w}\text{æ}$] since the second person duoplural subject prefix is *ah* ; for example, [$\text{k}\text{w}\text{æ}\text{h}\text{ʔ}\text{ás}$] 'you two come in'.

(Therefore, morphophonemically, [^wæ, ^wæ̃] could be sequences of /Vea/ where /V/ is one of /u, o, ɔ/. However, we are looking for phonemic /VV/ to represent the phonetic quantities and it is not a solution to introduce phonemic /VVV/.)

Our problem at this point, then, is to find /V/'s such that [^wæ, ^wæ̃] can be represented by /Va/. For the prelabialization to be represented in the sequence, /V/ must be one of /u, o, ɔ/ (one of the three full rounded vowels), but values have already been given to /ua, oa, ɔa/ so that an impasse has been reached in this first approach to the problem.

2.2.2 *Solution in which /eel/ represents [æ]*

So far, synchronic morphophonemics have been considered (possessives, first person singular and second person duoplural verb forms, diminutives, and fusions across word boundaries) in seeking /VV/ representations of [æ] and other extrasystemic quantities.

Taking an approach to our synchronic problem which relies less on synchronic morphophonemics but which has for its starting point a diachronic consideration, we note that the reflexes of *ə(?) in nouns are *e* and *é?*; for example, *ʔuge* 'fish', *ts'ʌdé?* 'blanket', in which the stem is *CVC-e(?)*. The suffix may be an integral part of the stem as in the two examples just given. Therefore, stems of the form *CV-e(?)* can be expected in which the root is *CV* instead of *CVC*.

Consider, therefore, the sequences /Ve/ where /V/ is one of the seven full vowels /i, e, ɛ, a, o, ɔ, u/. /ie/ is possibly a non-occurring sequence in Beaver but is likely to have the phonetic value [ye]--just as /we/ parallels /Cue/ [C^we] for *C* = Ø, so /ye/ parallels /Cie/ [Cye] if the latter occurs. /ue/ has already been exemplified in *-tšué?* 'water (possessed)'. /ae/ occurs in, for example, *se[?]ek'aé?* 'my (pig's) fat'.

The remaining /Ve/ sequences are /oe, ɔe, ee, ɛe/ and we

will examine the consequences of positing that they represent [^wæ, ^wæ̥, æ, æ̥] respectively, all of which occur finally in stems with or without absolute-final /h/. In this case, then, /ee/ represents [æ].

(In contrast, in the synchronic morphophonemics of suffixation, $e + e > e$ and $a + e > e$; for example, *t̂se* 'stone', *-t̂sé?* 'stone (possessed)'; *t̂s'á?* 'dishes', *-t̂s'é?* 'dishes (possessed)'. These are examples of single possession. The example *seʔek'aé?* 'my (pig's) fat', which contains the sequence /ae/, was an example of double possession containing two possessive prefixes *se* < *sA* 'my' and *ʔe* < *ʔA* 'its'.)

We have yet to find representations for [^wa, ^wã]. If we assume that these are /ua/ (or /oa/) and /qa/ respectively as before, then the sequences shown in table 3 occur. ('=' in the table stands for 'is represented by'.)

Table 3

	e	a
u	[^w e] = /ue/	[^w a] = /ua/
o	[^w æ] = /oe/	[^w ã] = /oa/
q	[^w æ̥] = /qe/	[^w ḁ̃] = /qa/
e	[æ] = /ee/	
ẽ	[æ̥] = /ẽe/	

Notice the parallelism between [wæ], [æ] represented by /oe/, /ee/, and [wæ̥], [æ̥] represented by /qe/, /e̥e/. If the same parallelism holds in the case of [wa] and [wā], then [wa], [a] are represented by /oa/, /ea/ (and the latter, of course, by /a/ also), and [wā], [ā] are represented by /qā/, /e̥ā/. We have, in fact, found a representation for [ā], namely /e̥ā/, which is consistent with the other representations. Table 3 may therefore be completed as shown in table 4.

Table 4

	e	a
u	[we] = /ue/	[wa] = /ua/
o	[wæ] = /oe/	[wā] = /oa/
q	[wæ̥] = /qe/	[wḁ̄] = /qā/
e	[æ] = /ee/	[a] = /ea/
e̥	[æ̥] = /e̥e/	[ḁ̄] = /e̥ā/

There is no representation for [wē], a fact which tends to confirm the analysis since [wē] is a non-occurring sequence. Since [we] is represented by /ue/, [wē] would be represented by /ue/ but there is no phoneme /ū/. Therefore the absence of [wē] is inherent in the system. The neutralization which occurs in the case of /ua/ and /oa/ (both representing [wā]), does not occur in the case of /ue/ and /oe/ (which represent [we] and [wæ] respectively).

Note the neutralization between /ea/ and /a/, both representing [a].

It needs to be emphasized that the representations in table 4 are phonemic and do not represent the output of morphophonemic processes. For example, as we have seen, morphophonemically the output of *e* + *a* in prefix strings is

[æ] (not [a]), in the present analysis to be written /ee/: [ʔæhtsʔe] /ʔeehtsʔe/ 'you dpl are the same' where *ʔe* + *ah* > [ʔæh] /ʔeeh/.

In the morphophonemics of the diminutive, in the present analysis, the diminutive suffix *ah* has the allomorph *ah* following rounded stem vowels but *eh* following the stem vowel *e*; for example, *džeyɔah* 'little bull moose', *ʔΔtʔəh* 'little leaf', *ʔehtʔuah* '22 shells', *tšəšʔuah* '22 rifle', but *dΔbeeh* 'sheep'.

However, there is no general rule for the formation of the diminutives of stems ending in *e*(ʔ). Besides *dΔbe*, *dΔbeeh*, examples include *nówe*, *nówah* '(little) wolverine', *tšʔoneʔ*, *tšʔoneh* (or *dž-ʔ*) 'wolf, coyote', *ʔuge*, [ʔugəe] '(little) fish'. Historically, only *dΔbe* contains a stem vowel *e* which is a simple reflex of a stem vowel **e*. In the other cases, *e* is either suffixal historically or contains a suffixal element.

Two of the representations that are posited, /oe/ and /oa/, contain the rare phoneme /o/; /o/ is almost always denasalized /ɔ/, occurring contiguous to /n/ (as in 'wolverine' and 'wolf' in the examples above). /oe/ occurs more frequently than /o/ itself. In stems, /oe/ [wæ] occurs in *-tšóeh* 'little daughter', *tsʔitsóeh* 'puppy', and *(ne)tšóeh* 'few'. But *-tšóeh* is morphologically complex, consisting of *-tšuéʔ* 'daughter' and the diminutive suffix *ah* (~ *eh*). In this example, therefore, the phonemic sequence /oe/ is the output of a morphophonemic process in which three vowels reduce, /ue + a/ > /oe/ so that /o/ does not correspond to a simple stem vowel, in this example and probably not in the others either. /oa/ is not a potential problem since it is neutralized with /ua/.

2.3 Phonemic representation of [w_Δ]

Paralleling the representations /ɔe/ and /oa/ for [w_æ] and [w_ɛ], we expect that the first element in the representation of [w_Δ] will be /ɔ/. [w_Δ] is a reduced vowel and we therefore require a reduced vowel as the second element (see section 2.2.1). Therefore the representation /ɔ_Δ/ is posited. [Δ] does not occur without prelabialization: /kɔ_Δ/ [kw_Δ] 'house'. If [Δ] was found without prelabialization, its representation in the system would be /ə_Δ/.

If /ɔ_Δ/, /ə_Δ/ represent [w_Δ], [Δ] respectively, then /o_Δ/, /e_Δ/ should represent [w_Δ], [Δ]. If that is the case, and /o_Δ/ represents [w_Δ], then just as the contrast between /oa/ and /ua/ is neutralized in the system, so the contrast between /o_Δ/ and /u_Δ/ can be expected to be neutralized. But /o_Δ/ and /u_Δ/ represent [w_Δ], which is an allophone of /ʊ/. Therefore, phonemically the contrast between all three of /o_Δ/, /u_Δ/, and /ʊ/ is neutralized. Similarly, just as the contrast between /a/ and /ea/ is neutralized, both representing [a], there is neutralization between /Δ/ and /e_Δ/, both representing [Δ]. See section 2.7 for further discussion of these points.

2.4 The phonemic status of /w/

We have observed already that [C^w] does not occur before /Δ/ since [w_Δ] is an allophone of /ʊ/ and [C^wΔ] is represented by /Cʊ/. [C^w] includes [ɣ^w], which occurs only stem-initially and fluctuates with [w], so that in stems /ɣʊ/ ~ /wΔ/.

Since [w] does not fluctuate with [γ^w] except in stem-initial position, sequences [wi, wɛ, we, wΔ, wa] occurring in prefix strings cannot be represented by / γVV / with values /ui, uɛ, ue, uΔ, ua/ for /VV/. /w/, therefore, is required as a phoneme in the language.

/w/ in prefix strings is frequently a morphophonemic variant of / γ /; for example, the sequence /wi/ is a variant of / γi / when immediately preceded by $w\Delta$, the space-time prefix--note that there is neutralization between / $w\Delta$ / and / wu / (a special case of the allophonic variation of / γ /). / $w\epsilon$ / is, in general, a non-occurring sequence (parallel to the fact that [$C^w\epsilon$] is a non-occurring sequence), but does occur when / $w\epsilon$ / is a morphophonemic variant of / $\gamma\epsilon$ / immediately preceded by the space-time prefix. / $w\epsilon$ / might have been expected to occur in the second person singular of optatives parallel to the fact that $C\Delta + n\Delta > C\epsilon$ for $C \neq w$, since the optative prefix is $w\Delta$. The sequence that does occur is / wq /, which can be explained by the fact of the neutralization between / $w\Delta$ / and / wu / . The remaining / wV / sequence is / wu /, which occurs when the space-time prefix immediately precedes an allomorph u of the optative prefix.

2.5 The phonemic status of /o/

[o], like [æ, æ̃, ɔ̃, ɔ̃̃], is a vowel of limited frequency and distribution. It is not found in any words of native origin unless contiguous to /n/ and in that case it is usually nasalized; for example, *nówe* ~ *nó̃we* 'wolverine', *noze* ~ *nó̃ze* 'skunk', *sagóné* 'my arm'. *ho* 'OK' has also been recorded as *hɔ̃*. In

words of non-native origin, it occurs in *soniya* 'money', and *gogóš* 'pig'.

Although phonemic /VV/ representations of other vowels of limited frequency and distribution have been posited, /o/ is retained as a unit phoneme. The vowel system is symmetrical with (back) rounded vowels /u, o/ corresponding to the front (unrounded) vowels /i, e/. /e, o/, the two mid vowels, both have corresponding nasalized phonemes, /ɛ̃, ɔ̃/ and these are the only nasalized vowel phonemes. /ɔ̃/, unlike /o/, is a phoneme of normal frequency and distribution.

Also, /o/ has been utilized in the representation /œ/ of [ʷæ]. (In the case of the representation /oa/ of [ʷa], this is not in contrast with /ua/ so that /o/ is not necessary for a /VV/ representation of [ʷa].)

To summarize therefore to this point. With only the ten vowels /i, e, a, o, u, ɛ̃, ɔ̃, ʊ, ʌ, ʊ/, /VV/ representations for the extrasystemic vowels [æ, æ̃, ʌ̃] and prelabialized [ʌ̃] have been found and in addition, representations /CVV/ for all [CʷV] (for C ≠ w).

In table 5, V receives in turn each of the phonetic values in the left margin of the table. For example, in the second column under [ʏ], [V] receives each of the values [e, æ, a, ʌ, o] and the phonemic representations of [ɛ̃, æ̃, ʌ̃, ʌ̃, ɔ̃] are /ɛ̃, ɛ̃e, ɛ̃a, --, ɔ̃/ (there is no occurrence of [ʌ̃] that is not prelabialized). Note that each of the ten single-unit vowel phonemes are included in the body of the table.

Note also that the table can be extended to include other phonetic quantities and their phonemic representations. In fact, in section 2.1, allusion was made to a morphophonemic process in which /Cɔ̃s/ becomes [Cʷʌ̃s] but [ʷʌ̃] was not included in the phonetic entities requiring a /VV/ phonemic representation. From the table, it can be seen that [ʷʌ̃] can be represented by /ɔ̃ʌ̃/.

Table 5

	[V]	[Y]	[wV]	[wY]
[i]	i		ui	
[ɪ]	ɪ	*	uɪ	*
[e]	e	e̥	ue	--
[æ]	æ	e̥e	oe	o̥e
[a]	(e)a	e̥a	ua/oa	o̥a
[ʌ]	(e)ʌ	*	uʌ/oʌ	o̥ʌ
[o]	o	o̥		
[ʊ]	ʊ (/uʌ)	*		
[u]	u			

*See section 2.7

2.6 Phonemic representation of [C^əV]

No consideration has been given yet to [C^əV] where [V] = [i, e, e̥] (that is, one of the full front vowels, non-nasalized or nasalized).

Phonetic quantities [(C)^əV] are found in three grammatical environments, in suffixes, in stems, and in verb prefix strings.

In suffixes, [e̥] is found in minimal contrast with [e]. The diminutives of stems of the shape CVC-*e*, where *e* is a suffix, are [CVC^əe]. Examples are *m̥e̥ge̥* 'lake', [m̥e̥g^əe] 'little lake'; *ʔuge* 'fish', [ʔug^əe] 'little fish'; *ɣʌdʒe* 'goose', [ɣʌdʒ^əe] 'little goose'; *ts'ége* 'Girly (personal name)', [ts'ég^əe] 'little girl'.

The schwa offglide is therefore phonemic, and of the ten vowel phonemes, / Δ / is the obvious choice for its representation. The phonemic representation of $[C^{\partial}V]$ is therefore / $C\Delta V$ /; for example, / $\text{tug}\Delta\text{e}$ / 'little fish'. It seems that the diminutive suffix *ah* occurs inside the suffixal *e* and reduces.

In stems, the schwa offglide seems always to be a reflex of PA **a* (or * α). The examples are $[-t^{\partial}\text{e}]$ / $-t\Delta\text{e}$ / 'father's brother', $[-k'^{\partial}\text{e}^{\partial}]$ / $-k'\Delta\text{e}^{\partial}$ / 'hip', $[\text{mehh}\acute{\alpha}k\acute{\alpha}i]$ / $\text{mehh}\acute{\alpha}k\Delta i$ / 'shovel', $[\text{d}\Delta\text{g}^{\partial}i]$ / $\text{d}\Delta\text{g}\Delta i$ / 'swan'.

Possessed noun stems, suffixed by \acute{e}^{∂} , in which $a + e > e$ (see section 2.2.2) probably arise synchronically through a similar process in which *a* reduces so that $ae > \partial e > e$ as in $t\acute{s}'\acute{a}^{\partial}$ 'dish', $-t\acute{s}'\acute{e}^{\partial}$ 'dish (possessed)'.

In verb prefix strings, $[C^{\partial}V]$ is the preferred variant, sometimes the only allowed variant, of $CaC'V$ where $C' = \gamma, d, n$, the consonants respectively of the γ -perfective, of a conjunct prefix $d\Delta$ (generally the inceptive), and of a conjunct prefix $n\Delta$ (generally the *n*-perfective prefix). Examples with the γ -perfective are $[\text{h}^{\partial}\acute{i}\acute{z}\acute{a}]$ / $\text{h}\Delta i\acute{z}\acute{a}$ / 'I went out', $[\text{h}^{\partial}\acute{e}\acute{z}\acute{a}]$ / $\text{h}\Delta \acute{e}\acute{z}\acute{a}$ / 'he went out', in which $\text{h}\Delta$ is an allomorph of $\text{h}\acute{a}$ 'out'.

In the case of $[\partial V]$, the phonetic peak is a full vowel, and in its phonemic representation / ΔV / the second vowel is full. In this case, then, as in others, the phonetic output of a / VV / sequence is full if the second / V / is full (and reduced if it is reduced). However, in the case of $[\partial V]$, nasalization, if any, is carried by the second vowel in its phonemic representation so that it is necessary to modify the previous statement (section 2.2.1) and say that nasalization is carried by the first

member of a /VV/ sequence unless that first member is a reduced vowel. Note that there are no /VV/ sequences, whether or not one of the vowels is nasalized, in which both vowels are reduced.

2.7 Advantages and disadvantages of the representations

The advantages of the phonemic representations which have been proposed are as follows:

(1) The allophonic variation of /u/ is locked into the representations in that there is neutralization between /u/ and /uΛ/ where /uΛ/ is a /VV/ sequence of the same type as other /VV/ sequences which are set up. In the allophonic variation of /u/, labialization, if any (see section 1.2), of an immediately preceding consonant is an integral part of the vowel.

(2) Similarly, in the other representations of prelabialized vowels, the labialization is an integral part of the /VV/ sequence. All labialized consonants (excluding /w/) are eliminated and consequently the restrictions on the occurrence of particular [C^w-V] sequences are removed.

(3) Further economy of phonemes is effected in the elimination of [æ, ɤ, ɶ, ɷ] from the system as unit phonemes, each of which were entities of limited frequency and distribution. Moreover, although attention has focussed on these, a prelabialized [ɷ] which has also been recorded (see sections 2.1, 2.5) can also be accommodated.

(4) The representations in terms of /VV/ sequences lead to a comparatively patternful array of /VV/ sequences (see tables 4 and 5), especially since in table 5 certain of the 'holes' can be filled in (see later in this section) (but not all since [i], [y] are non-occurring and rounded vowels do not occur prelabialized—except in the case of certain allophones of /u/ in

which labialization is integral to the allophone, see section 1.2).

(5) The only nasalized vowels required are /ɛ̃/ and /õ/.

(6) The absence of [wɛ̃] is explained in terms of the absence of any phonemic nasalized vowels other than /ɛ̃/ and /õ/; that is, there is no sequence /wɛ̃/.

One disadvantage in the system lies in its effect on the morphophonemics (compare sections 2.2.1 and 2.2.2). However, the morphophonemics of diminutives is complex anyway, and the morphophonemics of second person duoplurals could be accommodated by taking the underlying form of the second person duoplural to be Δh instead of ah .

The other disadvantage lies in the phonemic representation /uɪ/ for [wɪ]. There are a limited number of closed stems (stems with a final obstruent) of the form [C^{wɪ}C]. A /VV/ representation of the prelabialized stem vowel introduces a canonical stem shape /CVVC/ for these stems.

The alternative to the /VV/ representation of [wɪ] could be the introduction of certain labialized consonants as phonemes to accommodate these stems. Only stem-initial consonants [b^w], [g^w], and [k^w] have been recorded in stems of the form [C^{wɪ}C]; for example, [b^{wɪ}ʔ] 'sleep', [n^Δsk^{wɪ}ʃ] 'I vomit'. However, [wɪ] also occurs in verb prefix strings and in that case [ɪ] is immediately preceded by other labialized consonants; for example, [ʔ^Δn^{wɪ}sʔɛ̃hesɛ̃] 'I will steal' (compare [ʔ^Δnuʔɛ̃hesɛ̃] 'he will steal'), [sud^{wɪ}sdlehesɛ̃] 'I will be ready' (compare [sud^usdlehesɛ̃] 'he will be ready').

According phonemic status to these labialized consonants erodes the economy of phonemes effected by the system of /VV/ representations proposed.

In defence of the system, it may be observed that there is a sense in which /uɪ/ counts as a fourth reduced vowel. The

contrast between /ʊ/ and /uΔ/ is neutralized (section 2.3) so that /uΔ, uʌ/, prelabialized /Δ, ʌ/, are equivalent to /ʊ, uʌ/ phonemically. There is, therefore, a 2 x 2 symmetry between /Δ, ʌ/ and /ʊ, uʌ/.

In section 2.2.2, it was noted that there was neutralization between /a/ and /ea/. A parallel neutralization between /Δ/ and /eΔ/ may be assumed and the parallelism extended to /ʌ/ and /eʌ/ (see below for the utility of these observations). The 2 x 2 symmetry and these neutralizations are displayed in table 6. '=' in the table indicates neutralization between the two equated phonemic entities.

Table 6

	/Δ/	/ʌ/
/e/	/Δ/ = /eΔ/	/ʌ/ = /eʌ/
/u/	/ʊ/ = /uΔ/	/uʌ/

In section 2.1, it was observed that [wʌ] /uʌ/ was morphophonemically the reduced counterpart of /u/. The examples of verb forms earlier in this section illustrate this point. Similarly, [wʌ] is morphophonemically the reduced counterpart of /q/, but no /VV/ representation of [wʌ] has been proposed yet. However, if nasalization is applied to the system of reduced non-nasalized vowels in table 6, then a 2 x 2 system of reduced nasalized vowels is obtained, displayed in table 7. The /VV/ representation of [wʌ] is /qʌ/.

Table 7

	/Δ/	/ʌ/
/ɛ/	[ɛ̃] /ɛ̃Δ/	[ɛ̃] /ɛ̃ʌ/
/ɔ/	[ʊ] /ɔ̃Δ/	[wɛ̃] /ɔ̃ʌ/

If verb prefix strings are recorded in which /ɛ/ reduces morphophonemically, then the expected reduced vowel is [ɛ̃] /ɛ̃ʌ/ (paralleling the reduction /ʌ/, neutralized with /eʌ/, of /e/). (However, /ɛ/ when reduced has a tendency to denasalize.)

Table 7 includes /ɔ̃Δ/ which has been discussed in section 2.3. Just as /ʌ/ (which is neutralized with /oΔ/) has an allophone [wΔ] (section 1.2), so /ɔ̃Δ/ can be expected to have an 'allophone' [ʊ], as well as [wɛ̃], but /ɔ̃Δ/ is rare and only [wɛ̃] has been recorded, immediately following a velar as would be expected paralleling the allophones of /ʌ/; the example is [kʷɛ̃] /kɔ̃Δ/ 'house' (section 2.3).

Section 2.3 also included some discussion of [ɛ̃] /ɛ̃Δ/.

These reduced vowels can be incorporated into table 5; asterisks in that table indicate their places.

As before in the earlier tables, the entries in tables 6 and 7 do not represent the output of morphophonemic processes but show the phonemic representations of phonetic quantities.

Notes

1. The data for this paper was obtained by Marshall and Jean Holdstock of the Summer Institute of Linguistics. An analysis of Doig Beaver phonemics was undertaken

by me by reason of the 'residue' in the Holdstocks' own analysis and I am indebted to Marshall and Jean for time taken in recording and rechecking data as our work together proceeded. Their residue had included [ɪ] and [o] besides the other quantities of limited frequency and distribution which are the main concern of this paper. The write-up on which the paper is based goes back to 1975 and the presentation of the solution (but not the solution itself) has passed through various stages since that time.

The tone marking in this paper, especially of polysyllabic words, may not always be accurate.

2. In Central Carrier also, there is evidence that word-final stops and affricates should be assigned to the aspirated members of their respective series (see Story this volume a).
3. The deictic subject prefixes are *ts'Λ* 'exclusive first person duoplural' and *ɣΛ* 'third person duoplural' which, unlike the other subject prefixes, precede the conjunct derivational prefixes. (In Beaver, the first component of the discontinuous inclusive first person duoplural prefix *ŝΛ-...-ɪD* also occurs in the same position as the deictic subject prefixes, see Story this volume b.) However, the third person singular shares with the exclusive first person duoplural and the third person duoplural certain morphophonemic features and the term 'deictic persons' is used to refer to all three.
4. Reasons for analysing nasalized vowels in Chipewyan as /Vn/ are put forward by Cook (1983), but a parallel analysis is not followed in this paper for Beaver. If the analysis were to be adopted in Beaver, then, since Beaver has no prenasalized phoneme /nd/ (a phoneme which occurs in dialects of Slave and Dogrib), there

would be no ambiguity in the case of /VndV/; if necessary, [VnV] and [ɤnV] could be distinguished by /VnV/ and /VnnV/ respectively. The first could not represent [ɤV] since that phonetic sequence does not occur. However, in the phonemic representations to be presented in section 2, /ɤV/ phonemic sequences are set up. To rewrite these as /VVn/ (they cannot be written /VnV/ unambiguously) obscures the fact that the first vowel in such a sequence must be one of /e/ or /o/. In particular, [C^Wɛ] is a non-occurring sequence (section 2.2.2), a fact which has a ready explanation if, as in the system to be proposed, it would have the phonemic representation /Cɤe/; [C^Wɛ] is non-occurring because /ɤ/ is non-occurring. It is a complicating factor that, if /VVn/ is written, the vowel which essentially carries the nasalization is at one remove from /n/.

There are no medial syllable-final occurrences of [n] but there are syllable-final occurrences in word-final position immediately following a reduced (stem) vowel (section 1.1.3). Therefore, if nasalized vowels are written /Vn/, the sequence /Vn/ in word-final position represents a nasalized vowel if /V/ is full and a phonetic sequence if /V/ is reduced. However, there is one pair in which [ɤ] and [Vn] contrast minimally: [k^Wʌ̃] 'house' (admittedly an exceptional example) and [k^Wʌ̃n] 'fire'. In the system of phonemic representations to be presented, these are written phonemically as /kɔ̃ʌ/ and /kún/ respectively, although when [ɤ]'s are written as /Vn/, this pair of examples could be handled by writing /kóʌn/ and /kún/ respectively.

Apart from [k^Wʌ̃] 'house', reduced nasalized vowels do not occur in absolute word-final position. However, since they occur medially, it is necessary to stipulate, if nasalized vowels are represented by /Vn/, that it is only

in absolute word-final position that /Vn/, when /V/ is reduced, does not represent a nasalized vowel.

The restriction concerning the word-final distribution of /n/ is shared by /š/ also (section 1.1.1). By reason of the restriction, /š/ and /h/ are in complementary distribution word-finally so that it would be possible to write /Vh/ for both [Vš] and [Vh] in this environment; however, [š] and [h] are in contrast elsewhere. Therefore the rule which limits the distribution of /n/ word-finally is paralleled by a rule limiting the distribution of /š/ in the same environment.

As will be demonstrated in section 2, only two nasalized vowels, /ɛ/ and /ɔ/, are required to represent phonemically by means of /VV/ sequences a considerable number of phonetically nasalized syllable nuclei. Setting up these two additional phonemes seems preferable to introducing additional rules governing the conditions under which /(V)Vn/ is nasalized.

Beaver joins French in having a system of nasalized vowels in which the highest of the oral vowels are not matched by nasalized vowels (see Hockett 1955.90). In Beaver, of course, the lowest of the oral vowels /a/ is not matched by a phonemic nasalized vowel either, though [a] does occur nasalized phonetically (section 2.2.2).

5. The representations /ue, uɪ, ui/ for [w_e, w_ɪ, w_i] parallel quite closely the representation /ui/ for [w_i] discussed by Cook (1983) in his reconsideration of Li's transcription of Chipewyan diphthongs.

Cook discusses same-syllable sequences /Vi/ and /Vy/ in Chipewyan for /V/ = /a, u/ (and /o/). The latter do not occur in Beaver for two reasons, (1) the voiced fricative corresponding to /š/ is /ž/ in Beaver, not /y/, and (2) no obstruent syllable-finals in Beaver are voiced (section 1.1.1).

In the following sections, /VV/ representations are to be set up for phonetic quantities, not all of which are diphthongal. The crucial /VV/ sequence represents [æ] which is a monophthong (section 2.2.2).

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- _____. this volume b. The Athapaskan first duoplural subject prefix.

A Report on the Nature of Carrier Pitch Phenomena: With Special Reference to the Verb Prefix Tonomechanics

Gillian Story

It is probably well-known to Athapaskanists that the status of tone in Carrier, or indeed the question of whether Carrier was a tone language at all, has been a long-standing problem. Krauss, in his paper on Athapaskan tone (1978), has devoted a special section (7.2) to a discussion of the case of Carrier (and some Alaskan languages), in which he details the history of investigations into the language as these pertain to tone or its absence. Having myself spent some little time in the later 1970's attempting to solve the problem (from tape kindly recorded for me by Richard Walker, of monosyllabic nouns in substitution frames and verb paradigms), the question of Carrier tone returned at intervals to trouble me.

However, in the spring of 1984, Walker and I had the opportunity of being present when Eunice Pike¹ was able to be in Fort St. James for three weeks with the purpose of analysing the Carrier pitch system, in collaboration with Francesca Antoine, a native speaker of Central Carrier. Pike's approach was purely synchronic so that her results (1986) are without bias towards any particular theory of tonogenesis in Central Carrier, but they can easily be rooted comparatively and historically in Athapaskan terms. In the collaboration of Pike and Antoine the question concerning the nature of the Carrier pitch system was finally answered.

It is the purpose of this paper to give the Athapaskan interpretation of the results and to extend them to a discussion of Carrier verb morphology. There are many areas in which the corollaries of the findings are yet to be worked out (for example, in the tonomechanics of nominal compounding), so

that this paper is in the nature of a preliminary report. However, the findings to date are of sufficient interest that it seems desirable to give an account of them.

Central Carrier is on the border between a language characterized by accent and one characterized by tone. 'Accent' or 'stress' is the better term when single words are considered in their surface forms since a word carries one and only one 'accent'. However, when words (or morphemes) are juxtaposed, then, depending on the grammatical classes of the elements concerned, perturbations occur which are much more characteristic of a tone language. Tone is the term that will be used in this paper to denote the emic pitch features in Central Carrier.

1. Subphonemic pitch features

There are a number of features which influence the perception of pitch. First, there is a phonemic stress which is defined in terms of breath force and which is independent of high tone (pitch accent). It is phonemic since within the phonological word, the location of the syllable carrying stress is unpredictable.

Phonological words are not in one-to-one correspondence with grammatical words. Certain grammatical words are enclitic; that is, they are phonologically bound to the preceding grammatical word, constituting with it one phonological word. In grammatical terms, the stress is predictable; it falls on the final syllable (the stem syllable) of a grammatical word which is not an enclitic. In transcription of the examples, any enclitic is hyphenated to the preceding grammatical word so that hyphenation indicates the location of the phonemic stress when the stress does not fall on the final syllable of the phonological word (that is, stress occurs on the syllable immediately preceding the hyphen--or in the absence of a hyphen falls on the final syllable of the word):

dákeih 'Indian', *dákeih-ne* 'Indians', *ts'ənóh-ne* 'orphans', *nak'ets'élhya-i* 'eye glasses', *dáʔdəlni-ən* 'beggar' (boldface indicates the phonemically stressed syllable). Phonological word types are discussed in section 2.

Secondly, there are subphonemic pitch variants. There are two main conditioning factors. The first is dependent upon a fortis versus lenis syllable onset (vowel-initial syllables count as those having a lenis syllable onset, and /ʔ/ also is lenis in Carrier, classing with the nonaspirated nonglottalized stops and affricates--whereas in Babine it is fortis);² in analogous environments, the pitch of a syllable with a fortis onset is higher than the pitch of a syllable with a lenis onset. The second conditioning factor is that in analogous environments the high vowel /i/ raises the pitch of a syllable of which it is the nucleus; so does /u/ to a lesser degree (and /e/, /o/ to a yet lesser degree?).

In the examples which follow, the first in each pair carries higher etic pitch than the second. In the first set, the initial consonants are opposed as fortis to lenis: *shəs* 'hill', *jəs* 'fishhook'; *tu* 'water', *nu* 'island'; *tən* 'ice', *bən* 'roof'; *səs* 'bear', *yəs* 'wolf'; *chan* 'rain', *jan* 'old age'; *sa* 'sun', *ya* 'sky'. In the second set, the stem vowels are opposed as higher to lower tongue height (the stem initial consonants are either both fortis or both lenis): *tu* 'water', *sa* 'sun'; *bilh* 'snare wire', *bat* 'mitt'; *bit* 'char', *boh* 'war'; *si* 'I, me', *se* 'belt'; *so* 'frost', *sa* 'sun'. In the following triplet, the tongue height of the vowels are high, mid, and low, and the etic pitch descends higher to lower: *slu* 'my mother', *slo* 'my fish', *sla* 'my hand'.

These conditioning factors have frequently misled previous investigators including myself. In future paradigms, the complex future prefix *ti* (with fortis syllable onset and high vowel /i/) seemed to carry higher pitch than surrounding syllables; Cook (1976) often recorded future prefix strings

with an accent mark on *ti*. Morice also remarked that '[a tonic or pitch accent] ... is so feebly enunciated--in a somewhat higher tone--that except in a very few words in *i*, one can live years among those who speak that language without as much as suspecting its existence.' (Morice 1932). Most higher pitches, one must assume, he interpreted in terms of stress (a reasonable hypothesis when words are considered in isolation), and if there was a pitch feature, he felt that it was most likely to occur in association with the vowel *i*.

Syllable-final /ʔ/ raises the pitch of the syllable; otherwise syllable-final consonants do not perceptually affect pitch, except that in word-final position there is a downglide in pitch on CV and CVR syllables (where R includes any voiced continuant); the duration of these two syllable types is the same (so that V is longer in CV than in CVR). In syllables of other types, the pitch is level.

Fortis and lenis syllable onsets do not subphonemically condition the tongue height of the immediately following vowel as they do in Babine. Nor is it necessary to draw a distinction between short and long vowels in order to predict stress as in Babine.

Carrier is a 'stress-timed' language. In the following examples, the nouns in each case tend to occupy equal time: *ndí bənəts'ət'o-i ní* "'This airplane," he said', *ndí jéyo ní* "'This bull moose," he said', *ndí həyéneʔnəkaʔ-i ní* "'This sewing machine," he said', *ndí dəjé ní* "'This huckleberry," he said'.

2. Phonological word types

Words in isolation may be conveniently divided into two types. Words of the first type carry high tone on a nonfinal syllable. Between the syllable carrying high tone and the immediately following syllable there is usually (depending on

the subphonemic conditioning factors present) a relatively sharp drop in pitch or 'downstep'. Words of the second type carry high tone on the final syllable. (In both cases the pitch of the high tone syllable is not necessarily higher than the pitch of the preceding syllables.) A third word type will be added as the discussion proceeds (see section 3.2).

There is, therefore, a phonetic 'downstep' in pitch in a word carrying high tone on a nonfinal syllable (though the subphonemic conditioning factors may mask the downstep). In a sense, therefore, every syllable preceding the syllable carrying high tone itself carries a high tone. However, marking all syllables preceding the downstep for high tone would imply that each of the high tones was significant whereas, as will be seen in consideration of the verb tonomechanics especially (section 4), it is only the high tone at the location of the downstep which is an underlying high tone.

Examples of words carrying high tone on a nonfinal syllable are: *nəsálhk'əz* 'it's chilly', *yək'ənədálnih* 'he's feeling him', *yəts'ənəsətai* 'he kicked at it', *ts'ekéyaz* 'girl', *ts'ékuyaz* 'little girls', *k'ənəyéndənəghət* 'he saws it into small pieces', *nanádildzo* 'dew', *bénəts'əlgaih-i* 'bicycle', *lhiləzchən* 'mayflower', *h a n ə y e h m a i ?* 'seed', *ʔət'ankálchən* 'raspberry plant'.

Examples of words carrying high tone on the final syllable are: *dənəlbá* 'it's blondish', *whədəlhdəs* 'he's drilling a hole', *yək'ətəllhát*³ 'he's jumping down onto it', *kw'əts'əzdá* 'chair', *kw'əts'əzdachó* 'couch', *dəchəndəlt'ó* 'woodpecker', *datsanchó* 'raven', *ʔədəstl'əs* 'paper', *ʔəkengí* 'toenails', *ʔət'ankál* 'raspberry'.

In the introduction, it was stated that (phonological) words in isolation featured a 'pitch accent' carried by one and only one syllable of the word. In confirmation of the analysis described in this section, Eunice Pike suggested that

Francesca Antoine should sort disyllabic, and then trisyllabic, nouns into sets according to the location of the syllable carrying high tone. Two sets (without residue) were set up for disyllabic nouns with high tone falling on the first syllable in one set and on the second for the other set. Similarly, for trisyllabic nouns, three sets were set up. Examples of trisyllabic nouns (in addition to any included above) here sorted into sets, are:

set 1: *ʔásgobet* 'palate', *kék'etl'u* 'stocking', *kúnk'etsih* 'strawberry blight (plant)', *tsíbatyan* 'eagle';

set 2: *yántamáíʔ* 'lowbush blueberry', *ʔáyáŋgheʔ* 'marrow', *beʔúget* 'fork', *ʔəts'ínzəz* 'scalp';

set 3: *chəntəl híʔ* 'coyote', *ʔədəstíʔəs* 'fur; letter, bills, paper', *utsiyán* 'his grandfather'.

3. Tone perturbations

The tones carried by words in phrases or sentences do not necessarily correspond to the tones carried by the words in isolation. Tone perturbations occur. Probably certain domains are to be set up in which the perturbations may occur. These include Numeral + Noun and object Noun + transitive Verb (section 3.2), but not subject Noun + object Noun, or subject Noun + intransitive Verb. Perturbations occur within complement Noun + Copula (section 3.1), which parallel other perturbations in part but which require a separate discussion (because the copula is generally enclitic). Perturbations also occur between the members of a compound, but these have not been studied in any detail (see section 3.3.2). To account for perturbations, nouns and numerals have been assigned to Class NL (nonlowering) and

Class L (lowering) (see section 3.2 for the rationale of the terms 'nonlowering' and 'lowering').

3.1 Enclitics, noun classes, and perturbations

Enclitics have been mentioned; these generally include copulas, and also certain particles which, perhaps, are always final to a grammatical unit which is at least a phrase. Enclitic copulas include *ʔént'oh* 'it is', *səlíʔ* 'it became',⁴ and *íloh* 'it is not'. Other enclitics are exemplified by *ʔəghənɫí-ən* 'a guard', *ʔəghənɫí-ne* 'guards', *ts'udén-cha* 'the child also', *ts'udén-za* 'only the child', *ts'udén-ne* 'the children', *ʔədétso-ən* 'the firstborn'.

3.1.1 Monosyllabic nouns

When monosyllabic nouns are obtained in the frame N-za 'only a N', there are no pitch contrasts between the nouns, the high tone being uniformly carried by the nominal syllable; for example, *xóh-za* 'only a goose', *lhéz-za* 'only dust'.

However, when the enclitic carries an intrinsic high tone, the nouns may be divided into two classes according to the location of the high tone in the surface form of the structure. All the available monosyllabic nouns were obtained in the frame N-*íloh* 'not a N'; for example, *xoh-íloh* 'not a goose', *lhéz-íloh* 'not dust'. The high tone falls on the first syllable of the enclitic with nouns of the same class as *xoh* 'goose', class NL, but falls on the nominal syllable with nouns of the same class as *lhez* 'dust', class L. The enclitic *ʔént'oh* 'it is' patterns in the same way as *íloh* 'it is not' with respect to the location of the high tone.

Other examples of monosyllabic nouns of class NL are: *chan* 'rain', *dzin* 'day', *sa* 'sun', *delh* 'crane', *ts'i* 'boat', *ts'ih*

'mosquito', *tl'ulh* 'rope', *lho* 'fish', *ts'a1* 'diaper moss', *dlat* 'lakeweed', *lhut* 'scab'.

Other examples of monosyllabic nouns of class L are: *tsa* 'beaver', *k'en* 'saskatoon', *r'es* 'charcoal', *dzeh* 'pitch', *ts'eh* 'sinew', *kwən* 'fire', *ʔəlh* 'dam', *təz* 'cane'.

Class NL is the class whose members are reflexes of forms which do not contain a constricted vowel in their reconstructed forms; class L is the class whose members are reflexes of forms which do contain a constricted vowel in their reconstructed forms.

In the examples above, monosyllabic nouns of either class were represented without a high tone in their surface forms. But if every (free) phonological word contains one and only one high tone in its surface form (see section 2), then every monosyllabic noun (and every polysyllabic noun) carries a high tone in its surface form.

Suppose, in contrast to the surface forms, class NL monosyllabic nouns are represented in their underlying form without a high tone and class L monosyllabic nouns are represented in their underlying form with a high tone (the high tone is therefore the reflex of the PA vowel constriction). Then a tone rule is required that assigns a high tone to the surface form if no underlying high tone is present.

No tone rules are required to derive the surface form *xoh-íloh* 'not a goose' from the underlying form *xoh + íloh*. However, the surface form *lhéz-iloh* 'not dust' requires the cancellation of one of the high tones in the underlying form *lhéz + íloh*.

Therefore, at this point, two tone rules are required, one which assigns high tone to the surface form of any monosyllable which does not contain an underlying high tone, and one which cancels a high tone when a form contains two (or more) underlying high tones. The formulation (and expansion) of the rules will be left till a later section.

3.1.2 Polysyllabic nouns

Paralleling monosyllabic nouns, polysyllabic nouns of class NL contain no underlying high tone. Polysyllabic nouns of class L contain an underlying high tone, on the final syllable or a nonfinal syllable.

Monosyllabic nouns are a special case of polysyllabic nouns which carry high tone on the final syllable. Just as monosyllabic nouns can be divided into class NL and class L according to whether an underlying high tone is not, or is, carried by the monosyllable, so polysyllabic nouns, that in their surface form carry high tone on the final syllable, can be divided into class NL and class L according to whether the final syllable does not, or does, carry an underlying high tone on the final syllable. In the frame N-*íloh* 'not a N', when the substitution item is a polysyllabic noun, the perturbations which occur parallel those for monosyllabic nouns.

For example, class NL *dəchən* 'tree' (free surface form *dəché́n*), carrying no underlying high tone on the final syllable (or on any nonfinal syllable), parallels class NL *xoh* 'goose', and gives rise to no perturbation in the frame N-*íloh*: *dəchən íloh* 'not a tree'; similarly, *chəntəłhi* (NL) 'coyote', *ləbədak* (NL) 'potato' (the underlying forms of the nouns are given).

Class L *datsán* 'crow' (the free surface form is the same), carrying an underlying high tone on the final syllable, parallels *łhéz* 'dust', and does give rise to perturbation in the frame N-*íloh*: *datsán-íloh* 'not a crow'; similarly *nimbali* 'tent' (L), *nanistł'ú* (L) 'fence', *nanizmáz* (L) 'button', *suniyá* (L) 'money'.

Class L polysyllabic nouns carrying an underlying high tone on a nonfinal syllable give rise to perturbation in the frame N-*íloh* (in common with nouns of class L with underlying tone on the final syllable); for example, *jéyo*: *jéyo-íloh* 'not a bull moose'; similarly *ʔəyáŋgheʔ* (L)

'marrow', *netsínghai*? (L) 'a (person's) brain', *tsíbalyan* (L) 'eagle', *nenábagha* (L) 'a (person's) eyelash'.

The same pair of tone rules is required to derive the surface forms in the case of polysyllabic nouns as in the case of monosyllabic nouns (section 3.1.1).

The above paragraphs have described the regular perturbations that occur with noun stems immediately followed by an enclitic. Occasionally, other variants have been recorded when the noun is monosyllabic.⁵

The free surface forms of polysyllabic nouns carrying a high tone on the final syllable are not distinguishable psycholinguistically by class; that is, whether they are class NL or class L, they are psycholinguistically one type. As mentioned in section 2, Eunice Pike suggested that Francesca Antoine should sort disyllabic, and then trisyllabic, nouns into sets according to the location of the syllable carrying high tone; disyllabic nouns fell into only two sets and trisyllabic nouns into three sets. A set in which the high tone fell on the final syllable of the surface form contained both class NL and class L nouns; consider, for example, two sets of disyllabic nouns:

set 1		set 2	
lǝdí (L)	'tea'	wási (L)	'lynx'
?indzí (NL)	'strawberry'	débe (L)	'goat'
dəní (L)	'moose'	bánək (L)	'Indian bread'
dəchén (NL)	'tree'	tséldzu (L)	'comb'
dihchó (NL)	'blue grouse'	nát'oh (L)	'spruce hen'
nangéz (L)	'fox'	dákelh (L)	'Indian'
dəné (NL)	'man'	dátih (L)	'door'
ts'ənóh (L)	'orphan'	nízghes (L)	'blackflies'
ts'udén (L)	'child'	jéyo (L)	'bull moose'
ts'iyáz (NL)	'canoe'	bésk'i (L)	'seagull'

tl'asés (NL)	'dress'	ʔók'et (L)	'eddy'
tl'əghás (L)	'snake'	ts'íltəz (L)	'boat pole'

All nouns in set 2 above are, of course, class L.

It might have been expected that loanwords would belong to the unmarked class, to class NL; however, the evidence is that loanwords are just as likely to be members of class L: *lədí* (L) 'tea', *lisél* (L) 'salt', *lilét* (L) 'milk', *ligók* (NL) 'chicken', *məsdús* (NL) 'cow', *gəgús* (NL) 'pig', *bánək* (L) 'Indian bread', *libá* (L) 'yeast bread', *ləbáz* (L) 'lumber boat', *saldán* (L) 'soldier', *lilí* (L) 'bed', *dosó* (NL) 'burlap'. Nouns such as *jéyo* (L) 'bull moose' and *xéda* (L) 'moose' are loanwords from Sekani and the location of the high tone on the first syllable is probably to be accounted for by that fact.

3.2 Nonenclitics, noun classes, and perturbations

The discussion so far has concerned the perturbations occurring with noun and copulative enclitic. The perturbations occurring with object noun and transitive verb (neither word is an enclitic) require separate treatment. The same classes NL and L are required, with a given noun being assigned to the same class as before.

In the material studied, the verb was generally disyllabic, carrying high tone on the first syllable (in first dual forms), or carrying no high tone on the first syllable (third singular forms), in their unperturbed free forms. The verbs most frequently used were *nílʔen* 'we 2 see it' and *nilhʔén* 'he sees (it)' (in their surface forms). In general, the nouns elicited with these verbs were also disyllabic.

When the noun belongs to class NL, there is no perturbation of the tone carried by the verb, whether the first syllable of the verb does, or does not, carry high tone. The surface forms (with a high tone written on each phonological

word) are given in the following examples: *dəchén* (NL) *nílʔen* 'we 2 see a tree', *dəchén* (NL) *nilhʔén* 'he sees a tree'; *tʔəghás* (NL) *nílʔen* 'we 2 see poplar', *dihchó* (NL) *nilhʔén* 'he sees blue grouse'; *sás* (NL) *ínchʔi* 'shoot the bear!', *dən é* (NL) *ínchʔi* 'shoot the man!'.

When the noun belongs to class L, perturbations of the tone carried by the verb may occur. In addition, there may be more than one tonal variant of the verb. Compare, for example, *tʔəghás* (L) *nilhʔén* with pitches LL (low-low) carried by the verb, and *tʔəghás* (L) *nilhʔen* with pitches HL (high-low) carried by the verb, 'he sees the/a snake'. Both variants are possible with this particular noun and others, but both variants are not obtainable with all class L nouns.⁶ In the first of the variants (section 3.2.1; see section 3.2.2 for the second type), the pitch of the verb is low throughout and is contrastive with the pitch carried by words which carry high tone on either a nonfinal syllable or the final syllable. For example, compare also:

<i>tʔəghás</i> (L) <i>nílʔén</i>	'we 2 see the snake'
<i>tʔəghás</i> (NL) <i>nílʔen</i>	'we 2 see a poplar'
<i>tʔəghás</i> (NL) <i>nilhʔén</i>	'he sees a poplar'

in which the pitches carried by the verb are LL, HL, and MM (mid- mid) respectively.

The labels for the two classes, NL and L, 'nonlowering' and 'lowering', are derived from whether or not the low tone perturbation described above may be triggered by members of the class.

Words carrying the contrastive low pitch throughout represent the third word type (see section 2). Words of this type do not occur in isolation but only as perturbed forms.

Each syllable of a word carrying this contrastive low pitch will be marked with low tone in the transcription of

examples, but it should be noted that the low tone is different in nature from the high tone. (1) When low tone occurs, the word which carries it has been perturbed; when high tone occurs, the word which carries it has not necessarily been perturbed (for examples, see the paragraphs above). (2) Low tone is a word prosody and is carried by every syllable of the word; high tone is carried by one and only one syllable of the word. (3) Low tone represents a contrastive pitch phenomenon; high tone represents the contrastive placement of a pitch accent. Unmarked syllables do not carry a phonemic mid tone; rather, they are syllables in a word which does not carry the contrastive low pitch throughout, and are syllables which do not carry the word's contrastive pitch accent.

3.2.1 *Types of low tone perturbations*

The examples which follow are subdivided into those cases in which the noun is of class L and carries high tone on the final or on a nonfinal syllable, diagrammed as (CV)C⁷V and C⁷VCV respectively, and in which the verb in isolation does not, or does, carry high tone on the first syllable, diagrammed as CVCV and C⁷VCV respectively.

(1a) (CV)C⁷V + CVCV: *dəní nìlhʔèn* 'he sees the moose', *ts'eké nìlhʔèn* 'he sees the woman', *datsán nìlhʔèn* 'he sees the crow', *ts'udán nìlhʔèn* 'he sees the child', *ketál nìlhʔèn* 'he sees the bootliner', *nangéz nìlhʔèn* 'he sees the fox', *tsachán nìlhʔèn* 'he sees the cache', *k'azbá nìlhʔèn* 'he sees the ptarmigan', *ts'ənóh nìlhʔèn* 'he sees the orphan'. Similar examples were obtained with the verb *nagélh*⁸ 'he packs (it)', including the monosyllabic example *yés nàgèlh* 'he packs the wolf'.

(2a) (CV)C'V + C'VCV: *ts'ənóh nil'ʔèn* 'we 2 see the orphan', *tsalák nil'ʔèn* 'we 2 see the squirrel', *ʔəlhgák nil'ʔèn* 'we 2 see the mouse', *kecháp nil'ʔèn* 'we 2 see the spoon', *ts'ek'é't nil'ʔèn* 'we 2 see the muskrat', *t'és nil'ʔèn* 'we 2 see the charcoal', *tsá ìnch'i* 'shoot the beaver!', *yás ìnch'i* 'shoot the wolf!'. Parallel examples were obtained with the verb *ít'as* 'we 2 are cutting (it)', and other (CV)C'V nouns which may give rise to the low tone perturbation include *lhits'é* 'bitch', *datsán* 'crow', *ts'itél* 'cottonwood', *dəní* 'moose', *kwəntsít* 'embers', *k'azbá* 'ptarmigan'.

(3a) C'VCV + CVCV: *dábe nilh'ʔèn* 'he sees the goat', *xáda nilh'ʔèn* 'he sees the moose', *bésk'i nilh'ʔèn* 'he sees the seagull', *jéyo nilh'ʔèn* 'he sees the bull moose', *t'ácho nilh'ʔèn* 'he sees the mallard', *bánək nilh'ʔèn* 'he sees the Indian bread', *tséldzu nilh'ʔèn* 'he sees the comb', *húlhts'i nilh'ʔèn* 'he sees the nettle'.

(4a) C'VCV + C'VCV: *tséldzu nil'ʔèn* 'we 2 see the comb', *bánək nil'ʔèn* 'we 2 see the Indian bread', *nát'oh nil'ʔèn* 'we 2 see the spruce hen', *nízghes nil'ʔèn* 'we 2 see the blackflies', *dákelh nil'ʔèn* 'we 2 see the Indian'.

Case (4a)--and case (4b) to be discussed later--is the least well-represented in the data. Whether or not this variant of C'VCV + C'VCV actually occurs depends on the interpretation of the data.⁹ However, the perturbations occurring between object Noun + transitive Verb are probably parallel to those occurring between Numeral + Noun. When the numeral is of class NL, there is no perturbation of the tone of the immediately following noun. Class NL numerals include *nankí* 'two', *tá* 'three', *dəng hí* 'four' (in their surface

forms). When the numeral is of class L, only one variant of tone perturbation of the immediately following noun occurs, the variant which consists of low tone throughout the perturbed word. Class L numerals include *ʔil hó* 'one', *kwəláiʔ* 'five', *lhtak'ánt'i* 'seven', *lhk'ədénghi* 'eight'. Examples are:

(1a) (CV)C'V + CVCV: *ʔil hó dàtsàn* 'one crow', *ʔil hó ligòk* 'one chicken', *ʔil hó t'l'èghès* 'one snake', *ʔil hó t'èghès* 'one poplar', *kwəláiʔ dàtsàn* 'five crows', *kwəláiʔ ligòk* 'five chickens', *kwəláiʔ gègùs* 'five pigs', *kwəláiʔ ʔèlghèk* 'five mice'.

(2a) (CV)C'V + C'VCV: *ʔil hó dèbè* 'one goat', *ʔil hó bànèk* 'one Indian bread', *kwəláiʔ dèbè* 'five goats', *kwəláiʔ bànèk* 'five Indian bread'.

(3a) C'VCV + CVCV: *lhtak'ánt'i dàtsàn* 'seven crows', *lhtak'ánt'i ligòk* 'seven chickens', *lhtak'ánt'i t'l'èghès* 'seven snakes', *lhk'ədénghi ligòk* 'eight chickens', *lhk'ədénghi tsèk'èt* 'eight muskrats'.

(4a) C'VCV + C'VCV: *lhtak'ánt'i bànèk* 'seven Indian bread', *lhk'ədénghi bànèk* 'eight Indian bread'.

3.2.2 Types of non-low tone perturbations

In the second type of variant which occurs in the structure object Noun + transitive Verb, it is tentatively hypothesized that the variant consists of a high tone on the first syllable of the verb when the noun is diagrammatically of the form (CV)C'V (that is, carries high tone on the final syllable in its underlying form), and consists of no perturbation when the

noun is diagrammatically of the form C[́]VCV (that is, carries high tone on a nonfinal syllable in its underlying form). Since in the case of (2) (CV)C[́]V + C[́]VCV, the verb already carries high tone on the first syllable, it is only in case (1) (CV)C[́]V + CVCV that there is in fact perturbation in the case of this second type of variant.

The second type of variant is well-attested only in the case of (1b). In the numbering of the examples in section 3.2.1, (a) denotes the first type of variant, in which low tone occurs on each syllable of the perturbed word; in the numbering of the examples in this section, (b) denotes the second type of variant.

For comparison with the examples to be given below, examples already given in section 3.2 with class NL nouns (there are therefore no perturbations with these nouns) are repeated here (in their surface forms with one high tone to each phonological word): *dəchén nílhʔén* 'he sees a tree', *dəchén nílʔén* 'we 2 see a tree'. The examples of the second type of variant (with class L nouns) are:

(1b) (CV)C[́]V + CVCV: *lhits'é nílhʔén* 'he sees a bitch', *taló nílhʔén* 'he sees a salmon', *tsachén nílhʔén* 'he sees a cache', *ketál nílhʔén* 'he sees a bootliner', *tl'əghəs nílhʔén* 'he sees a snake', *dohghá nílhʔén* 'he sees tree moss', *datsán nílhʔén* 'he sees a crow', *ts'ítél nílhʔén* 'he sees cottonwood'. A monosyllabic noun example is *tsá nágelh* 'he packs a beaver' (free form *nagélh*) which can be compared with a (1a) perturbation *tá tsá nàgèlh* 'he packs three beaver'. In most of the cases tested, either of the two variants (1a) or (1b) was acceptable with a given (unmodified unpossessed) noun; that is to say, for example, that in the pairs *kesgwát nílhʔén* and *kesgwát nílhʔén* 'he sees the/a moccasin', and *ts'éh nílhʔén*

and *ts'éh nilhʔén* 'he sees (the) sinew', both variants were acceptable.

(2b) (CV)C'V + C'VCV: there are no certain examples of this perturbation with a disyllabic noun. However, the following is an example with a monosyllabic noun, assuming that the noun is correctly assigned to class L: *yén nílʔén* 'we 2 see (some?) ground'. Also, the pair of examples *kwén dèsk'áih* 'I'm making the fire' and *kwén dílhk'aih* 'make a fire!' were obtained in the same paradigm,¹⁰ the first a type (2a) perturbation and the second a type (2b).

(3b) C'VCV + CVCV: when the verb is *nilhʔén* 'he sees (it)' or *nagélh* 'he packs (it)', there are no unambiguous examples of no perturbation though most are almost certainly not (3b) perturbations but (3a) perturbations, except perhaps (*guzíh*) *t'ácho nilhʔén* 'it (whiskyjack) sees a mallard' and (*guzíh*) *nát'oh nilhʔén* 'it (whiskyjack) sees a grouse' (assuming on the available evidence that these are the correct representations in this pair of examples), but note the pair of examples (3a) *kék'et'u èntsiʔ* 'the stocking is bad' and (3b) *tsíbalyan èntsiʔ*¹¹ 'eagles are bad'. In the first of the pair the low tone variant occurs, but in the second no perturbation occurs.

(4b) C'VCV + C'VCV: most of the examples are probably to be interpreted as low tone variants of type (4a), but there are at least two examples which illustrate cases of no perturbation; these are: *t'ácho ính'i* 'shoot a mallard!', *nát'oh ính'i* 'shoot a grouse!'.

Note that an additional tone rule is required to cover the case of (1b). The form of this rule will be left in abeyance for the moment.

The perturbations that have been described in sections 3.1, 3.2, and subsections are summarized in table 1. The underlying form of the first constituent is given down the side of the table and the underlying form of the second constituent across the top. The forms in the body of the table are surface forms. Boldface indicates those cases in which perturbation has occurred and brackets indicate those cases which are poorly substantiated in the data.

Table 1

	iloh	CVCV	CVCV or CVCV
CVCV (NL)	CVCV-iloh	CVCV CVCV	CVCV CVCV
CVCV (L)	CVCV -iloh	(2a) CVCV CVCV (2b) [CVCV CVCV]	(1a) CVCV CVCV (1b) CVCV CVCV
CVCV (L)	CVCV -iloh	(4a) CVCV CVCV (4b) [CVCV CVCV]	(3a) CVCV CVCV (3b) [CVCV CVCV]

3.3 Preview of the tone rules of the verb prefix string

Rather than return to a discussion of the inter-word perturbations after the tonomechanics of the verb prefix string have been discussed (in section 4), the tone rules for the verb prefix string will be presented at this point, and parallels drawn between the inter-word perturbation processes and the prefix string tonomechanics. In addition, the tonomechanics of nominal compounding will be touched on.

The tone rules that will be substantiated in section 4 relative to the verb prefix string tonomechanics are:

1. the leftmost underlying high tone is moved one syllable to the right, unless the movement is blocked by a high tone already carried by that syllable;
2. all high tones but the leftmost are cancelled;
3. when the segmental morphophonemics require syllable reduction (in which a syllable is either dropped or becomes the consonantal syllable coda to the preceding syllable), any high tone carried by the reducing syllable is carried by the output: $CVC\acute{V} > C\acute{V}(C)$;
4. if the word carries no underlying high tone, high tone is assigned to the final syllable of the surface form.

The ultimate justification for the rightward movement of an underlying high tone lies in the verb prefix tonomechanics (and, it is to be expected, in the tonomechanics of nominal compounding when these are better understood).

3.3.1 Review of the perturbations

It needs to be emphasized, in drawing parallels between the inter-word perturbations and the verb prefix tonomechanics, that in the case of the perturbations, the earlier intra-word tonomechanics are assumed, so that when a word carries a high tone on a nonfinal syllable, that high tone will not move one syllable to the right--any rightward movement of underlying high tones internal to the word precede the perturbations; examples are: *íloh* 'it is not', *tsíbalyan* 'eagle', *dítnikwən* 'lightning', *ts'ekéyaz* 'little girl', *ʔəyáŋghəʔ* 'marrow', *nát'oh* 'spruce hen', *jéyo* 'bull moose'.

The parallels between the perturbations described in section 3.1 between a noun and the enclitic *íloh* are closer to the verb prefix string tonomechanics than are the parallels between the perturbations described in section 3.2 between two independent words and the verb prefix string

tonomechanics, since both the noun-and-enclitic string and the verb prefix string are contained in only one phonological word. When the noun carries no high tone, there is, of course, no perturbation; for example, *dəchən-íloh* 'not a tree'. When the noun carries a high tone on the final syllable, its rightward movement is blocked by the high tone immediately to the right carried by the enclitic (rule 1) and the high tone carried by the enclitic is cancelled (rule 2); for example: *datsán-iloh* 'not a crow'. When the noun carries a high tone on a nonfinal syllable, the high tone carried by the enclitic is again cancelled (rule 2); for example, *jéyo-iloh* 'not a bull moose'.

The perturbations between two elements, of which neither are enclitic (and therefore both of which are full phonological words), described in section 3.2, can also be discussed in terms of the tone rules. In type (b) perturbations (the non-low tone perturbations, see section 3.2.2), there is actual perturbation only in case (1b), in which the final syllable of the first element carries a high tone and the first syllable of the second element does not carry a high tone, and there is rightward movement of the high tone across the word boundary; for example, *datsán nilhʔen* 'he sees a crow'. In case (2b), the first syllable of the second element does carry a high tone, and the rightward movement of the high tone across the word boundary is blocked; for example, *datsán nilʔen* 'we 2 see a crow'. In cases (3b) and (4b), the syllable of the first element which carries high tone is nonfinal so that the rightward movement of the high tone is blocked internally to the noun; for example, *jéyo nilhʔén* 'he sees a bull moose'; *jéyo nilʔen* 'we 2 see a bull moose'.

In type (a) perturbations (the low tone perturbations, see section 3.2.1), there is, of course, no rightward movement of a high tone across the word boundary.

3.3.2 *Tonomechanics of nominal compounding*

Any discussion of the tonomechanics of nominal compounding must be nonsystematic at this point in time. But for a starting point, consider trisyllabic nominal compounds--then if the tone rules freely operate across the syllable boundaries, the three tonally contrasting surface forms, with high tone carried by the first, second, or third syllables respectively, derive from the underlying tone patterns as follows ('-' represents a syllable which does not carry an underlying high tone):

HHH	H-H	-H-
HH-	H--	--H
	-HH	---

In the first and second columns, tone rules 1 and 2 operate (tone rule 1 in either the movement of a high tone or the blocking of its movement). The output for each of the entries in the first and second columns corresponds to the surface forms which carry high tone on the first and second syllables respectively. In the third column, rule 1 operates in the first entry (in movement of the high tone), and in the third entry rule 4 operates. The output for each of the entries in the third column corresponds to the surface form which carries a high tone on the third syllable. Note, however, that in this case only the output corresponding to the last entry is class NL--the other two are both class L, carrying underlying high tones. Examples are: *(ne)ná + bá + ghá > (ne)nábagha* 'a (person's) eyebrow', *yén + tə + máí? > yəntəmai?* 'lowbush blueberry', *ya + tú? + bá > yatúba* 'ocean shore', *?ə + tsí + n + zéz > ?ətsínzəz* 'scalp', *chən + tə + lhi > chəntəlhí* 'coyote'.

In the disyllabic case, only underlying 'H H' gives a surface form carrying high tone on the first syllable; for example, *?ó + k'ét > ?ók'et* 'eddy'. The other three patterns are exemplified by *ts'é + ke > ts'eké* 'woman', *lhi + ts'é >*

lhits'é 'bitch', and *də + chən > dəchən* 'tree'; only the last is class NL.

However, it is certain that distinctions will need to be made on the basis of the structural type of the compound. Within the phrase and clause, it has been found that inter-word perturbations do not occur across all grammatical boundaries (as already indicated in section 3); for example, in the clause *bésk'i* (L) *lhóh* (L) *lhái* (NL) *əʔáɪh* 'seagull eats many whitefish', the object noun phrase *lhóh + lhái* (class L noun + class NL postmodifier) does not perturb the verb *əʔáɪh*.¹² Similarly, the compound *buschó* 'cougar', which comprises the noun *bús* (L) 'cat' and postmodifier *cho* (NL) 'big', is nonperturbing (class NL); that is, the underlying forms *bús + cho > buscho* (without high tone)--in its surface form *buschó* (by tone rule 4). Compare *buschó* 'cougar' with *ts'eké* 'woman', both 'H -' in their underlying forms, but the first class NL and the second class L.

An example of tone rule 3 operating in nominal compounds is found in *tsát'en-ne* 'Beaver Indians' if *tsát'en < tsá + hot'en*. *tsíbalyan* 'eagle' could be another example if the constituent meaning is 'old/wise grey head' in which *tsí* 'head' + *dəlba* 'grey' > *tsíba*.

3.3.3 Tonomechanics of suffixed stems

Tone rule 3 also operates in the derivation of possessed noun stems. The three noun stems *ts'i* 'boat', *ʔáɪh* 'snowshoe', and *xelh* 'pack, supplies' have all been found to be class NL. However, as possessed forms, they are all class L: *uts'i* 'his boat', *sʔái* 'my snowshoe', *sghél* 'my pack'; and *ts'i-ʔánt'oh* 'it's a boat', *ʔəbá uts'i-ʔánt'oh* 'it's dad's boat'. On historical grounds, it may be posited that the possessed forms occur with an underlying suffix with a constricted vowel giving rise to an underlying high tone. When the suffix is dropped, the high tone is carried by the stem.

Similarly, the reflexes of suffixed *CVC-V stems (see Krauss 1978 for the reconstructions), with constricted vowel in the stem and/or suffix, are almost without exception class L. No exceptions have been found in the reflexes of such suffixed stems when both vowels are constricted (similarly, when neither vowel is constricted, the reflexes have been found to be class NL). The exceptions have occurred in the reflexes when one of the vowels is constricted; the exceptional examples are *schəl* 'my younger brother', *stse?* 'my daughter', *swəs* 'my shoulder', *sdzat* 'my shin', each unexpectedly class NL.

4. Tonomechanics of the verb

In section 3.3, a preview of the tone rules operating in the verb prefix string was given.

It is necessary to specify that the domain in which the tone rules operate is the verb prefix string and not the verb word. The rules fail to hold across the prefix-stem boundary (see section 4.2). Were it not for the fact that the tone rules completely account beyond reasonable doubt¹³ for the data within the verb prefix string, their failure to operate across the prefix-stem syllable boundary might seriously call them into question. It is possible to set up verb stem classes X and NX and to say that class X stems block the rightward movement of an underlying high tone from the syllable immediately preceding, and that class NX stems do not, but class X and class NX are not congruent with class L and class NL, at least if class L stems are reflexes of stems which contain a constricted vowel in PA and class NL stems are reflexes of stems which contain a nonconstricted vowel in PA.

Classes X and NX, if set up, are set up on a different type of criterion from classes L and NL. Classes L and NL are set up on the basis of whether a word of the class is perturbing or

nonperturbing (or equivalently, lowering or nonlowering--there are, of course, perturbations other than the lowering perturbation); classes X and NX are set up on the basis of whether or not a stem of the class blocks the rightward shift of an underlying high tone, or in other words whether or not the stem may be perturbed.

The tone rules are repeated here, without formalization, for reference:

1. the leftmost underlying high tone is moved one syllable to the right, unless the movement is blocked by a high tone already carried by that syllable;
2. all high tones but the leftmost are cancelled;
3. when the segmental morphophonemics require syllable reduction (in which a syllable is either dropped or becomes the consonantal syllable coda to the preceding syllable), any high tone carried by the reducing syllable is carried by the output: $CVC\acute{V} > C\acute{V}(C)$;
4. if the word carries no underlying high tone, high tone is assigned to the final syllable of the surface form.

Rules 2 and 3 may be reversed but otherwise the rules are ordered.

4.1 Operation of the tone rules in the verb prefix string

The operation of the tone rules will be illustrated first by reference to paradigms containing the continuative prefix *né* which carries an underlying high tone.

1s	nəsésya	'went'	netísyalh	'will go'
2s	nəsínya		netányalh	
3s	nəséya		netíyalh	
1d	nésit'az		netat'es	

2d	nəsáhʔaz	netfhʔəs
3d	nəhézʔaz	nəhétiʔəs ~ nótiʔəs
1p	nəts'édzil	néztidəlh
2p	nəsáhdil	netfhdəlh
3p	nəhézdil	nəhétidəlh ~ nótidəlh

The *s*-perfective prefix *sə* has an allomorph *z*, the latter occurring non-word-initially in the deictic¹⁴ persons when the classifier is zero (in common with Athapaskan languages in general). The underlying form of the progressive prefix in Carrier is *i*¹⁵ so that the complex future prefix has the form *ti*. Therefore the paradigms displayed above may be analysed as follows:

1s	né	sə s	ya	né	ti s	yalh
2s	né	sə in	ya	né	ti in	yalh
3s	né	sə	ya	né	ti	yalh
1d	né	sə iD	ʔaz	né	ti iD	ʔəs
2d	né	sə h	ʔaz	né	ti h	ʔəs
3d	né hə	z	ʔaz	né hə	ti	ʔəs
1p	né ts'ə	z	dil	né ts'ə	ti	dəlh
2p	né	sə h	dil	né	ti h	dəlh
3p	né hə	z	dil	né hə	ti	dəlh

Note the following additional segmental morphophonemics in Carrier:

- (1) *i + i* becomes *a* (and similarly *u + i* becomes *o*), so that in second singular *ti + in* becomes *tan* and in first dual *ti + iD* becomes *taD* in the future forms above;
- (2) the reduced vowel *ə* is dropped before a full vowel;

(3) *Cəh* becomes *Cah* when the *h* is syllable-final; see the second duoplural forms above.

The VV reduction rules (1) and (2) above precede the tone rules so that in the perfective and future first dual forms, the underlying high tone of *né* is blocked in rightward movement by the tone of the immediately following syllable, *sí(D)* and *tá(D)* respectively (tone rule 1).

In first dual forms the high tone is always carried by the prefix string in the surface form. In the absence of a preceding prefix with an underlying high tone, the high tone is carried by the first dual prefix itself; for example: *nanílneh* 'we 2 are extinguishing it (again)', *tílneh* 'we 2 swallow it', *dílkwəs* 'we 2 are coughing', *ʔít'as* 'we 2 are eating', *íltəs* 'we 2 are strong'. If there is a preceding prefix which carries an underlying high tone (as, for example, *né* in the paradigms under consideration), then this high tone cancels the high tone of the first dual (whether the prefix immediately precedes the first dual prefix or not) (tone rule 2).

Tone rule 3 covers the case of the variant third dual and plural and of the first plural in the paradigms above. In the third person forms, *nó* is a variant of *nəhə* so that in the syllable reduction *nə + hə > nəhə > nó*. In first plural, *ts'ə*¹⁶ becomes *z* under certain conditions so that *nə + ts'ə > nəts'ə > nəz*.

That the first dual prefix always carries an underlying high tone which never shifts to the stem syllable can be explained by this rule of syllable reduction. In Fraser Lake Carrier, the first dual prefix is *idəD* segmentally (Morice 1932); therefore if it is assumed that in Central Carrier the underlying form of the prefix is *idəD*, the underlying high tone of the prefix shifts one syllable to the right and the syllables then reduce: *idəD > idəd > iD*, so that in the absence of a preceding high

tone, the high tone always falls on the first dual prefix in a first dual form.

The final tone rule is necessary since, as will be emphasized again at this point, there is no contrast between the free surface forms of class NL and class L words when the high tone falls on the final syllable of the word. Excluding words carrying low tone throughout (section 3.2.1), every (phonological) word carries one and only one high tone.

The following partial paradigms further illustrate the tone rules:

1s	nənéska? 'am/are sewing'	nədétiznih 'will move hand'
1d	nénika?	nədétalnih
1p	néznəka?	nézdətılłnih
1s	néntiskalh 'will sew'	nənɸʔəntiszət 'will think'
1d	néntakalh	nənɸʔəntadzət
1p	nəts'éntikalh	nənɸʔts'əntizət

We will now consider some *s*-perfective paradigms containing a conjunct derivational prefix.

We shall be positing an allomorph *izə* of the *s*-perfective prefix that occurs with conjunct derivational prefixes and that carries an underlying high tone. Slave is a language which regularly has allomorphs of the *th*-perfective prefix (cognate with the Carrier *s*-perfective prefix) that carry a high tone in persons besides the deictic persons with a conjunct derivational prefix. We will therefore look at some Slave data in support of the allomorph to be posited for Carrier. There are paradigm variants and the one most germane to our purposes is not the regular variant; it comes from the Slavey dialect (Rice 1983b.469):

gonéthehza	'I reached goal by persistence'
gonéthiza	'you sg reached goal'

gonéhza	'he reached goal'
gonéthíza	'we reached goal'
gonéthahza	'you pl reached goal'

Note that a high tone is carried by the conjunct derivational prefix *ne* in all persons and that it immediately precedes the partials *th(e) ~ h* of the *th*-perfective prefix.¹⁷

Consider now the following Carrier paradigm containing a conjunct derivational prefix *nə* :

1s	ukénistai	'looked for it'	ukənánistai	looked for it again'
2s	ukénintai		ukənánintai	
3s	yékéniztai		yəkənániztai	
1d	ukénitai		ukənánitai	
1p	ukézniztai		ukənázniztai	
2dp	ukénihtai		ukənánihtai	
3dp	hikéniztai		hikənániztai	

If *ké* carries an underlying high tone--as it appears that it does from the second paradigm in which the underlying high tone shifts one syllable to the right and falls on the iterative prefix *na*-- then it must be supposed that the *s*-perfective prefix co-occurring with a conjunct derivational prefix carries an underlying high tone, since in the first paradigm the underlying high tone carried by *ké* is blocked in its rightward movement. In Babine, the form of the *s*-perfective prefix with a conjunct derivational prefix is *iz(ə)* (actually *ez(ə) ~ iz(ə)*, the allomorphs phonologically defined by fortis versus lenis syllable-initial consonants), and if in Carrier we posit *íz(ə)* for the underlying form of the *s*-perfective prefix with a conjunct derivational prefix, then several features of *s*-perfective paradigms are accounted for.

As we have seen, in paradigms of the type represented by *ukénistai*, which contain a disjunct derivational prefix carrying an underlying high tone, the rightward movement of the high tone is blocked by the high tone of *íz(ə)*; then, by the second tone rule, the high tone carried by the *s*-perfective prefix is cancelled by the high tone carried by the derivational prefix. Other examples are: *nédizni* 'I moved my hand', *yádisnat* 'I bumped ashore'.

But in paradigms which do not contain a disjunct derivational prefix carrying an underlying high tone, a high tone is carried by the conjunct prefix string in all persons or in the nondeictic persons (depending on whether the stem is class X or class NX respectively); the latter case is to be discussed first. In either case, there is no high tone carried by the disjunct prefix string to cancel, under rule 2, any high tone carried by the conjunct prefix string.

Consider the paradigm:

1s	tísyá	left, went'	tə	ízə	s	ya
2s	tínya		tə	ízə	in	ya
3s	tizyá		tə	íz		ya
1d	tít'az		tə	ízə	íD	ʔaz
2d	tíhʔaz/táhʔaz		tə	ízə	h	ʔaz
3d	hətizʔáz	hə	tə	íz		ʔaz
1p	əztizdíl	ts'ə	tə	íz		díl
2p	tíhdíl/táhdíl		tə	ízə	h	díl
3p	hətizdíl	hə	tə	íz		díl

Suppose the allomorph of the *s*-perfective in the nondeictic persons were simply *í* (as the surface forms would suggest), then in the second singular and first dual it would be expected that *t-í-in-ya* > *tányá* and *t-í-íD-ʔaz* > *tát'az* respectively, yielding the wrong vowel in the prefix strings. If, rather, the

underlying form of the prefix is *ízə* as posited, then in second singular and in first dual, the segment *z* separates the two vowels *i* so that syllable reduction may be posited (for all the nondeictic persons), counterfeeding the rule $i + i > a$.

The above paradigm is representative of a number of *s*-perfective paradigms with conjunct derivational prefix in which in the output the prefix string does not carry a high tone in the deictic persons. Other examples are:

1s	nanísnó	'extinguished it'	ʔənísdaí	'overate'
2s	nanílhno		ʔəníndaí	
3s	nainílhno		ʔənisdaí	
1s	nadísgih	'dried it'	ntísʔi	'hid it'
2s	nadílhgi		ntílhʔi	
3s	naidílhgi		yəntílhʔi	

If, as posited, the *s*-perfective prefix co-occurring with a conjunct derivational prefix is *íz* (or *ís* with non-zero classifiers) in the deictic persons and *ízə* in the nondeictic persons, then in the nondeictic persons, $ízə > ízə$ by the first tone rule which then reduces to *í*, but in the deictic persons, if the stem is class NX, the underlying high tone of *íz* shifts onto the stem syllable. See section 4.2(6) for the discussion of parallel *s*-perfectives containing class X stems.

A number of examples will now be given to illustrate the operation of the tone rules for a variety of derivational prefix strings; in most cases the inflection will be imperfective. In the first set, the underlying high tone of the continuative prefix *né* (which has an allomorph *né* immediately preceding a glottal stop) has moved one syllable to the right, any derivational prefix to the left of the continuative being 'neutral' in tone: ʔək'əneʔégəz 'he writes', yək'ənədəlínih

'he's feeling him', *k'ənədətək* 'it breaks, is brittle', *k'ənəyéndənəghət* 'he saws it into pieces'. In the second set, the continuative prefix blocks the rightward movement of an underlying high tone immediately preceding it: *ʔəghánəwhələ* 'he's checking (the net)', *yəts'énəsətəl* 'he's kicking at it', *béneʔəldas-i* 'weighing scales', *bénəts'əlgaɪh-i* 'bicycle', *yéneʔər'en* 'he uses it'. The next two examples contain the postposition *ts'ə* 'to, at' (with allomorph *ts'é* before a glottal stop): *yəts'əháyih* 'he's calling him', *sts'éʔnalhchəs* 'he hit me'. In the second of the examples, syllable reduction has occurred. Note also the sequence *-ts'énə-* in an earlier example in which the rightward movement of the underlying high tone of *ts'ə* is blocked.

A number of the examples given have contained *bé/yé* 'instrumental'. Note also *bédahaʔdət'as-i* 'can opener', *behánaʔnət'as-i* 'hair clippers', *dá* (and *há*) in the first example has an underlying high tone blocking the rightward movement of the high tone of *bé*. *hanáyəh* 'it (plant) grows up out of the ground' illustrates the underlying high tone of *há* 'out, off'. However, in *behánaʔnət'as-i*, the underlying high tone of *bé* has shifted rightwards onto *ha*; there is a second prefix *ha* of similar meaning to the first which does not carry an underlying high tone. It is illustrated by *hayant'áz* 'he cut it out', *hanillhóh* 'he lost his hair', *hayanyéz* 'he plucked the feathers'; compare the last example with *hayányəz* 'he broke it off'. *ha* (without an underlying high tone) refers to an area from which something is removed.

In one dialect of Fort Nelson Slave, Rice (1983a) has reported that a tone shift occurs. In this dialect of Slave, the rightmost high tone of the stem attaches to the syllable to the

left of the syllable that it is lexically associated with. This tone may push other marked tones leftwards. (There is also a rule of 'tone spread' rightwards but the rule of 'tone attachment' is more akin to the Carrier phenomenon.) However, note that in Carrier, a high tone attaches or shifts to the syllable to the right of the syllable that it is lexically associated with. Also, in Carrier, the leftmost high tone cancels any high tones to its right so that it cannot be said whether or not shifting high tones push any high tone of a syllable immediately to the right. In Slave, prefix tones are attached to the syllable with which they are lexically associated and only move if they are pushed by stem high tones whereas, in Carrier, prefix high tones are shifting and a prefix high tone which is the leftmost moves one syllable to the right if that second syllable carries no underlying high tone; if the second does carry a high tone, then the high tone on the first syllable does not push it but is blocked in its rightward movement. In Slave, more than one high tone per word may occur; in Carrier, in surface forms, one and only one high tone occurs (unless, of course, the word is perturbed to low tone throughout). No inter-word perturbations have been reported in Slave.

4.2 The prefix-stem boundary--where the rules fail

All the types of inflectional prefix strings have not been studied yet in conjunction with the prefix-stem boundary. In this section, only the zero-imperfective, y-perfective,¹⁸ and s-perfective will be discussed systematically. The material will be presented in tabular form (tables 2-4) with commentary and examples.

Key to the tables:

- D the derivational prefix (if any) contained in the verb carries no underlying high tone

- +D the verb occurs with a derivational prefix carrying an underlying high tone; the prefix is represented by C \bar{V}
- C the verb contains no conjunct derivational prefixes
- +C the verb contains a conjunct derivational prefix; the prefix is represented by C(ə)

I imperfective

P perfective

in intransitive

tr transitive

'persons': column gives the persons, if any (depending in some cases on the transitivity of the verb), in which, given the specified conjugation type, derivational prefixes, and mode, an underlying high tone occurs in the syllable immediately before the stem; if no persons are given, it is not possible to say whether the verb stem is class NX or class X for the reason given in the table.

'typical prefix string': column gives a representative underlying form of the prefix string for the conjugation type, derivational prefixes, mode, and persons specified.

(#) see table 4 for further columns of tables 2 and 3.

'stem class': if the verb stem class is NX, the underlying high tone carried by the syllable immediately preceding the stem shifts to the stem syllable; if the verb stem class is X, the underlying high tone is blocked in rightward movement and is therefore carried in the surface form by the syllable immediately preceding the stem.

'secondary definition of stem class': column gives any alternatives in terms of which the occurrence of the high tone on stem or prefix in the surface forms may be predicted.

Table 2

conjugation type	derivational prefixes	mode	persons	typical prefix string
(Ø, y)	-D, -C	I, P	no high tone in string	
	+D, -C	I	1sg in/tr 3sg in	C'Vs (1) C'V
		P	1sg in/tr 3sg in	C'Vis ¹⁹ (2) C'Vi
	-D, +C	I, P	no high tone in string	
	+D, +C	I, P	conjunct prefix 'buffers' stem from the high tone of the disjunct prefix	

Table 3

conjugation type	derivational prefixes	mode	persons	typical prefix string
(Ø, s)	-D, -C	I	no high tone in string	
		P	3sg tr	yéz (3)
	+D, -C	I	1sg in/tr 3sg in	C'Vs (4) C'V
		P	3sg in (l-class)	C'Vlh (5)
	-D, +C	I	no high tone in string	
		P	deictic	C'z (6) (see section 4.1 and below)
	+D, +C	I, P	conjunct prefix 'buffers' stem from the high tone of the disjunct prefix (see section 4.1)	

Table 4

typical prefix string	stem class	secondary definition of stem class (if any)
(1) C'V(s)	NX	none (all class NX; that is, high tone invariably carried by the stem in surface form)
(2) C'Vi(s)	X	none (all class X; that is, high tone invariably carried by prefix string in surface form)
(3) yéz, yélh	NX, X	NX if stem final is voiced, X if stem final is voiceless
(4) C'V(s)	NX, X	NX if stem final is voiced, X if stem final is voiceless
(5) C'Vlh	NX, X	no secondary definition recognized at present
(6) C'íz/C'ís/C'ílh	NX, X	possible congruence between classes NX, X and classes NL, L respectively (if classes NL, L defined on basis of PA forms)

Examples and commentary:

(1) and (2): Examples obtained with *há* 'out, off', *whé* 'away', and *ná* 'down' include: *hasghás* 'I bite it off', *hásghaz* 'I bit it off' (with third singulars *hayélhghas* 'he bites it off', *hayálhghaz* 'he bit it off'); *hazgáih* 'I run out', *házgai* 'I ran

out'; *halgáih* 'he runs out', *hálgai* 'he ran out'; *whesyáih* 'I go away', *whésya* 'I went away'; *wheztlát* 'I jump away', *whéztloh* 'I jumped away'; *whesnéh* 'I swallow it down', *whésno* 'I swallowed it down'; *nasʔát* 'I throw the fabric down', *násʔoh* 'I threw the fabric down'; *nazts'ít* 'I fall down', *názts'ət* 'I fell down'; *nast'áh* 'I fly down', *nást'o* 'I flew down'.

Under certain conditions, the y-perfective prefix deletes. It has been assumed that the deletion $C'Vi > C'V$ (where *i* is the y-perfective prefix) is earlier than the tone rules; if not, then there are no grounds for setting up classes NX and X. Instead, the syllable reduction tone rule 3 accounts for the surface high tone carried by the disjunct prefix.

(3): With a fourth person object, the underlying string *yáz* occurs in these forms. (Note that the subject prefixes *ts'ə* and *hə* belong to a different position class from *yə*, and *ts'əz* and *həz* do not carry an underlying high tone.)

Examples include: *yəlhts'əl* 'he cooked it by the fire', *yəzdáz* 'he wove it', *yəlht'é* 'he fried it', *yəlhlhó* 'he rubbed it with ointment', *yəzdííz* 'he boiled it', *yəlhgí* 'he dried it', *yəzbéz* 'he stretched it out'; compare *yəlhc'h'əl'h* 'he bit it', *yézt'əs* 'he cut it', *yézgəs* 'he bit him', *yézwət* 'he speared it', *yézguh* 'he grabbed it', *yézdzih* 'he clawed it', *yézdluh* 'he snared it', *yézdzo'h* 'he hooked it'. Many of the verb forms with voiceless stem finals are semelfactives, but perhaps not all; for example, *yəzch'í* 'he shot it' and *nayélhyih* 'he cured him', which might be expected to be semelfactive and nonsemelfactive respectively.²⁰

There is at least one verb root which occurs in a pair of stems with voiced or voiceless stem final in verb forms of this

type: *yəzjú* 'he put fish on sticks', and *yəzjuh* 'he harpooned it'.

(4): In the available data for this case, the disjunct prefix with an underlying high tone is *nə́* 'continuative'.

Examples are: *nəsgú* 'I'm driving about', *nəsgəz* 'I'm dragging it', *nəsyá* 'I'm walking', *nəsté* 'I'm dreaming', *nəsné* 'I'm moving house', *nəlbán* 'river is overflowing'; compare *nəzget* 'I'm crawling', *nəzgaíh* 'I'm running', *nəsbáíh* 'I'm swinging', *nəszut* 'I'm skating', *nəkəs* 'a car is going about', *nəkat* 'cars are going about'. Proportionately, there are very few counterexamples to the secondary definition of classes NX and X in terms of a voiced/voiceless stem final, and it is expected that these need correction.

(5): Again, in the available data, the disjunct prefix with an underlying high tone is *nə́* 'continuative'.

The allomorph of the *s*-perfective prefix immediately following a disjunct prefix with the classifiers other than the *l*-classifier is syllabic and has the form *sə*; for example, *nəsəya* 'I walked about'. Therefore it is only with the *l*-classifier that an underlying high tone is carried by the syllable immediately preceding the stem. The prefix syllable, with the disjunct derivational prefix *nə́*, is *nə́lh* in its underlying form.

Examples include: *nə́hlhóh* 'he rushed about', *nə́lhget* 'he crawled', *nə́lhts'ət* 'he staggered, fell about', *nə́lhɔzət* 'he hunted', *nə́lhwət* 'a fish jumped', *nə́lhtl'az* 'he walked with crutches', *nə́lhgai* 'he ran', *nə́lhbán* 'river overflowed', *nə́lht'ó* 'lake overflowed', *nə́lhtal* 'water burst', *nə́lhcház* 'fabric moved about'.

(6): In section 4.1, paradigms of the type *tísyá*, *tínyá*, *tízyá* were illustrated where a high tone occurs on the syllable immediately before the stem in the nondeictic persons in the

surface forms, but the high tone occurs on the stem syllable in the deictic persons. In this case, the stem is assigned to class NX.

However, there are paradigms which are also *s*-perfectives with a conjunct derivational prefix and no disjunct derivational prefix with an underlying high tone, which occur with a high tone on the syllable immediately before the stem in all persons of the surface forms. Examples include:

1s	tísdlat	'left by raft'	tízgai	'left running'
2s	tínlat		tílgai	
3s	tízdlat		tílhgai	
1s	tísno	'swallowed it'	ʔədísɣwət	'speared a tree'
2s	tílhno		ʔədínɣwət	
3s	yətílhno		ʔədízɣwət ²¹	

Stems in this case are assigned to class X.

The tone rules fail at the prefix-stem boundary in the sense that the secondary criteria defining class X and NX stems for different paradigm types are miscellaneous (for example, all stems for a given paradigm type are of class NX, or stems with voiced stem final are class NX and stems with voiceless stem final are class X; see the column headed 'secondary definition of stem class' in table 4). The rules also fail (if it is to be accounted failure in this case) in the sense that classes X and NX are not congruent with classes L and NL respectively (where classes L and NL correlate with words which are reflexes of PA forms containing or not containing a constricted vowel in any one or more syllables). Whether verb stems can be classed as L and NL will not be known until perturbations are studied between verb and postverbal (assuming that there are such structures within which inter-word perturbations do occur).

At this point, it appears that classes X and NX are only a descriptive convenience. Classes X and NX were set up on the assumption that underlying high tones would move across

the prefix- stem boundary as they do across certain other boundaries (including the boundaries internal to the prefix string). A better understanding is needed of the mechanisms affecting the movement (if any) of underlying high tones across boundaries between elements which are not strings (for example, in the verb word and in certain types of nominal compounding).

Notes

1. Eunice Pike is an International Linguistics Consultant of the Summer Institute of Linguistics. Without her collaboration with Francesca Antoine, there would be nothing to say in this paper.
2. The Central Carrier examples in this paper are given in a symbolization which is close to the orthography in use for the language (the differences are that <u> is here used for /u/ instead of <oo>, <ə> for /ə/ instead of <u>, and <x> for /x/ instead of <kh>). Lenis consonant phonemes are *b*, *d*, *dl*, *dz*, *j*, *g*, *gw*, *ʔ*, *l*, *z*, *y*, *gh*, *w*, *m*, *n*, and in some dialects *ng*. Fortis consonant phonemes are *t*, *t'*, *tl*, *tl'*, *lh*, *ts*, *ts'*, *s*, *ch*, *ch'*, *sh*, *k*, *k'*, *x*, *kw*, *kw'*, *wh*, and *h*. The vowel phonemes are *i*, *e*, *a*, *o*, *u*, and *ə*.
The fronted *ts*-series of consonants has been neglected in the transcription of examples. The members of the series are contrastive with members of the *ts*-series in the speech of Francesca Antoine but are merged with it for younger speakers of Central Carrier.
3. There are no verb stem initials which are voiceless fricatives in Carrier; a verb stem initial *s* or *lh* is derived from an underlying *ts* or *tl* respectively when immediately preceded by a consonant of the same point of articulation,

so that *ss*, *zs*, *lhlh*, and *llh* are derived from *sts*, *zts*, *lhtl*, and *lil* respectively.

4. The form to be expected here would be *səlī* 'it became' (compare Dogrib *whelī*) as, indeed, is given by Morice (1932, section 709).
5. Probably in the case of the regular perturbations, the noun and enclitic comprise one phonological word but in the case of the occasional other variants, the noun and enclitic comprise two phonological words; for example: *xoh-īloh* (itches MHL) (approximately mid, high, and low) versus *xóh íloh* (itches HML) 'not a goose'.
6. There is some evidence to suggest that there is a semantic difference between the two variant types of perturbation and that the difference is between Definite-Indefinite, Specific-Generic, Given-New, or some such pair of terms, the first of the pair correlating with the low tone perturbation; for example: *tá tsá nàgèlh* 'he packs three beaver', but *tsá nágelh* ; *sbát nàgèlh* 'he packs my mitts', but *bát nágelh*.
7. Pike (1984) discusses (CV)C'V nouns of class L according to whether they always, sometimes, or never (in the present data) give rise to the low tone perturbation in the immediately following verb, and she therefore has a three-way classification of these nouns. In the present paper, since it seems that the choice between the two perturbation variants (of which one is the low tone perturbation) could be a semantic one (see note 6), I have not attempted to subdivide the nouns on the basis of whether perturbations by the noun are of one or two types.

8. The verb *nagélh* 'he packs (it)' is progressive. The underlying form of the progressive prefix in Carrier is *i*, the same as the underlying form of the *y*-perfective prefix in Carrier (see note 18). Like the *y*-perfective prefix (see section 4.2), the progressive prefix deletes under certain conditions.
9. The question is whether in pitches HLML (HL carried by a disyllabic noun CVCV, and ML by the verb *nílʔen*), the third pitch is phonemically raised above the pitch level of a subphonemically conditioned low tone. At the time of the investigation, it was felt in retrospect that syllable-final *l* [d^l] might have influenced the perception of the pitch of the first syllable of *nílʔen*.
10. The paradigm was obtained in 1977; see note 21.
11. Generally there is no perturbation between a subject noun and an intransitive verb; for example: *tsʔudán* (L) *nəbé* 'the child is swimming'--or between a subject noun and an object noun (see note 12 for an example). However, there is clearly perturbation in *kékʔetlʔu əntsìʔ*. Perhaps intransitive verbs require subclassing into active and nonactive verbs with respect to whether or not they may perturb when preceded by a class L subject noun. Recall that perturbations do occur when the verb is copulative in those cases in which it is enclitic.
12. The clause in question is the second illustrated below:

subject NP	object NP			VP
	Numeral	Noun	Modifier	
1	nankí (NL)	ligók (NL)	niłhʔén	
2 bésk'i (L)		lhóh (L)	lhái (NL)	əʔálh
3	ʔilhó (L)	lìgòk (NL)	niłhʔén	
4 bésk'i (L)		lhóh (L)	ntél (L)	əʔálh

(The vocabulary items are: *bésk'i* 'seagull', *lhóh* 'whitefish', *ligók* 'chicken', *ʔilhó* 'one', *nankí* 'two', *lhái* 'many', *ntél* 'broad', *əʔálh* 'he eats (it)', *niłhʔén* 'he sees (it)').

Compare this clause with the fourth and note that the object noun phrase does perturb the verb if *ntél* is substituted for *lhái*. Note also that in both the second and third clauses the object noun phrase comprises a class L word followed by a class NL word, but the grammatical classes of the words are different in the two cases. In the clauses illustrated, perturbations occur within the object noun phrase in clause 3, and between the object noun phrase and the verb phrase in clauses 3 and 4.

Possibly inter-word perturbations only occur in endocentric constructions, a satellite of class L perturbing an immediately following nucleus. If so, perturbations would occur between NPo + VP (object noun phrase and verb phrase) or Num + Noun (numeral and head noun) but not between Noun + Mod (head noun and postmodifier) or NPs + Pred (subject noun phrase and transitive or intransitive predicate), as has been generally found. Perturbations would also be expected between possessor Noun + head Noun, and AP + VP where AP included postpositional phrases.

13. There is no reason to suppose that the few inconsistent forms in a recorded paradigm will not check out in

accordance with the rules. It may be necessary to posit underlying forms which are different from what would be posited simply from the segmental morphophonemics; *ídəD* and *ízə* are cases in point (see section 4.1). Another case is the third plural animate object prefix, *bə* in surface forms, *həbə* underlyingly (the partial *hə* is suggested by prefixes cognate with it, notably the Babine form of the prefix). In the paradigms for 'give them (animate) to you', high tone occurs on the postposition throughout and it does not shift to the syllable *bə* 'them' immediately to its right in the surface form; for example, *nghábətəsləlh* 'I will give them to you'. This is to be expected if the underlying forms are *n-ghá-həbə*... in which *ghá-həbə* > *ghahábə* > *ghábə* by tone rules 1 and 3.

14. The term 'deictic' is used to denote the subject prefixes *ts'ə* '1pl / unspecified' and *hə* '3dp' which occur in a position preceding other conjunct prefixes (except the pronominal direct object prefixes). However, it will be convenient to speak of these as the deictic subject prefixes but to include third singular in the term 'deictic persons'.
15. See note 8.
16. The morphophonemics of *ts'ə* 'unspecified' are different from the morphophonemics of *ts'ə* '1pl'. With the meaning 'unspecified', *ts'ə* never reduces (see, for example, Morice 1932, section 2237 and following sections).
17. Since in Slave the reflex of the reduced vowel is /e/, these Slavey forms do not provide evidence one way or the other for a reconstruction **eʔ-sə* of the *s*-perfective prefix; that is, a reconstruction that includes a vocalic

element **e* in all persons. However, in support of the two-syllable reconstruction, note the Babine form of the *s*-perfective prefix quoted in the next paragraph.

18. The underlying form of the *y*-perfective prefix in Carrier is *i*. Note, for example, *yitnó* 'he devoured it', *yitnáí?* 'he drank it', *yidlát* 'he licked it', *yildíl* 'he ate pl objects', all *D*- or *l*-classifier verbs, and *yants'ét* 'he scratched it', *yanzéz* 'he sipped it', *yan'ál* 'he ate it', *yalhtl'éz* 'he hammered it', all zero or *lh*-classifier verbs, in which *yi* < *yə-i* and *yan* < *yə-i-in* (where *i* is the *y*-perfective prefix and *in* is the perfective marker with zero and *lh*-classifier verbs). *i* + *i* > *a* is a general morphophonemic rule in Carrier, to which reference has been made in section 4.1.

19. See note 18.

20. Morice 1932 confirms that *yəzch'í* is semelfactive, containing the vowel *i* in its imperfective prefix string, and that *nayélhyih* is not (see sections 780, 1079). *yih* is an invariable stem.

21. This paradigm, and others, was tape-recorded by Bernadette Rossetti in 1977. Her paradigms provide further evidence for the tone rules although these do not operate so consistently in this data. Underlying high tones may fail to shift, as throughout the paradigms *dána?dis?aih* 'I lock the door', imperfective, perfective, and future, although they do shift in other parallel paradigms: *nenádistih* 'I put a long object down again', *tenánis?aih* 'I take a round object out again'. There may be fluctuations within the same paradigm in which the tone does or does not shift: *uk'ənásta* ~ *uk'énasta* 'I'm looking

at it', *uk'ənístáʔ* ~ *uk'énístáʔ* (y- perfective) 'I looked at it'. Occasionally, there seems to be uncertainty as to which of two underlying tones cancel: *uk'əntáltalh* or *uk'éntáltalh* 'we 2 will look at it'; *nətálgih* or *nétálgih* 'we 2 will run'. The same paradigms for 'look at' were recorded at an earlier time (Walker p.c.) and in them the location of the high tone in these surface forms is regular throughout. However, in the 1977 tape-recording, the tones become much more consistent as the recording proceeds.

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Chilcotin Tone and Verb Paradigms

Eung-Do Cook

0 Introduction*

The title of this paper may sound somewhat pretentious because the description presented here will prove to be not as thorough and comprehensive as one would have expected. However, the data and analysis, albeit limited in scope and condensed for brevity, are intended to give a comparative perspective on two very important topics, tone and verbal morphology, which are dealt with by other contributors in this volume (see Hargus, Rice & Hargus, and Story).

The origin of stem tone is well documented. Krauss (1978) traced it back to the stem-final laryngeal feature which has given rise to high tone (i.e. 'high marked') in some languages such as Slave and Chipewyan or to low tone (i.e. 'low-marked') in others such as Dogrib and Sekani. Aside from this study of stem tone and the study of Sarcee tonomorphophonemics (Cook 1971), there are few comprehensive in-depth studies of Athapaskan tone. The studies dealing with tone offered in this volume, including those by Rice and Story, reveal dynamic characteristics of Athapaskan tone that provide a new clue to the underlying regularity. Rice shows how underlying marked stem tone in Fort Nelson Slave floats or spreads backward. Interestingly, marked stem tone does not float backward in all Slave dialects, but marked prefix tone does (see Rice & Hargus in this volume). This 'backward spreading' contrasts with the 'forward spreading' in Chilcotin (see below).

Carrier is considered to be one of the best documented Athapaskan languages; however, its tone has been most elusive, so much so that Krauss (1978) could not determine

whether the stem tone is high-marked or low-marked even after a careful study of all available material of direct and indirect sources. This uncertainty is understandable considering what Story (this volume) and Pike (1986) have uncovered of Carrier tone. There is not only allotonic variation conditioned by syllable type, but also tonal 'perturbations' caused by lexical subclasses in certain syntactic environments. It is now clear that Carrier is high-marked, although the marked tone is realized by different pitch levels in different phonological and syntactic contexts. These discoveries make it possible to approach Athapaskan tone examining the following characteristics:

- (1 a) High-marked vs. low-marked,
- b) Backward spreading vs. forward spreading,
- c) Allotonic variations conditioned by syllable types,
- d) Tonal perturbation conditioned by lexical subcategories in certain syntactic contexts.

The Slave language is characterized by high-marking and backward-spreading. It seems that (c) and (d) are absent in Slave. Carrier is characterized by high-marking and the presence of (c) and (d), while the status of spreading is yet to be determined. As will be shown, Chilcotin is high-marked and forward spreading. There is also evidence for the presence of (c) and (d), thus making Chilcotin probably the most heavily marked of the known characteristics of Athapaskan tone.

There are a number of reasons why the behaviour of tone is investigated in the context of verb paradigms. While nouns, postpositions, and other lexical categories normally exhibit no interesting tonal characteristics except markedness (either high-marked or low-marked), verbs reveal other dynamic features, particularly the nature of (1b), which is triggered not only by the stem tone, but also by other prefixes. Rice & Hargus (this volume) demonstrate that the tone which is underlyingly associated with a conjugation marker in Slave and Sekani floats or spreads backward to be linked to another

prefix. It will be shown that the marked high tone of prefixes spreads forward in Chilcotin. There is also a phenomenon of forward floating and perturbation caused by prefixes, including conjugation markers, that obscures the underlying regularity of tone patterns. For this reason, Chilcotin tone is investigated within the framework of verb paradigms.

There is another reason why this study is focussed on verb paradigms. Aside from inconsistencies of labelling, there is still no satisfactory means to deal with the aspect and mode categories of the Athapaskan verb paradigms. Rice & Hargus, in this volume, present a proposal on the basis of Slave and Sekani that might serve as a model in defining the two major grammatical categories in Athapaskan. Although no comprehensive study of Chilcotin verb paradigms is attempted here, salient features of them are offered from a comparative perspective in the hope that the conservative features of Chilcotin verbs will provide further insight into understanding the complex nature of the Athapaskan verb.

This paper is organized as follows. Section 1 deals with four major boundaries and their role in constraining phonological rules. The primary purpose of this section is to provide the reader with adequate information to understand the data and analysis presented in the subsequent sections. Section 2 is concerned with the morphemic identity of the most important conjunct prefixes and their roles in characterizing verb paradigms. It will focus on the prefixes of aspect and mode categories that have been one of the major research interests of Athapaskan students. Tone is presented in the last section within the framework of verb paradigms discussed in section 2.

0.1 Abbreviations

Well established abbreviations as well as some new conventions are used in the presentation of data. In identifying paradigmatic forms by subject, the following abbreviations are used: 1, 2, 3, 12, 22, and 33 for first person

person singular (1sg), second person singular (2sg), third person singular (3sg), first person duoplural (1dp), second person duoplural (2dp), and third person duoplural (3dp), respectively. Other symbols include O (direct object), C (classifier), PP (postpositional phrase), 4p (fourth person or third person object prefix, *ye-*).

0.2 Orthography

The Chilcotin data are presented in the practical orthography with the exception of one symbol (see below). Most of the symbols used in the practical orthography are the same as the phonemic symbols. Where the two symbols are different in the following charts, the orthographic symbol is given following the phonemic symbol.

(2) Vowels

a) Tense

i

u

æ/a

b) Lax

ɪ/ɨ

ʊ/o

ɛ/e

(3) Consonants

b d dl dz d̂z dj/j g ɡ/gg ɡʷ/gw ɡʷ/ggʷ

p t t̰ ts t̂s tc/ch k q kʷ/kw qʷ/qw

t' t̰' ts' t̂s' tc'/ch' k' q' kʷ'/kw' qʷ'/qw' ?

ɬ/lh s ŝ c/sh ɬ̰/x xʷ/wh xʷ/xw h

m n l z z y ɣ/gh w ɣʷ/ŵ

The pharyngealized sibilants are represented with a superscript, e.g. *ŝ*, *ž*, etc. Two other pharyngealized series include the Q-series (*ɡ*, *q*, etc.) and Q^ʷ-series (*ɡʷ*, *qʷ*, etc.). *c* and *j* in the phonemic symbols are *š* and *ž*, respectively.

In this study *ɬ* is written *ɬ*, not *lh*, since *ɬ* is widely accepted for the practical orthography of many Athapaskan languages. The use of a single symbol instead of a digraph avoids possible confusion that would arise from the juxtaposition of *lh* in underlying (morphophonemic) and surface representations.¹

Normally, only the underlying marked tone (H) and reversed/perturbed tone (H or L; see section 3) are marked by superscripts (\hat{V} , \check{V}) where tone is not relevant to the discussion. This means that underlying nonhigh (L) and assimilated high are not normally marked. In section 3, a contour tone is marked by superscript \hat{V} , which should not be confused with \hat{C} (pharyngealized sibilants).

1. Prefix positions, boundaries, and phonological rules

In the present analysis of Chilcotin verb paradigms, only the most closely knit prefix categories, the six prefix positions from root² will be dealt with. Other prefix categories beyond these six will be included in the discussion on an ad hoc basis when, and if, they are relevant to the point at issue. The six prefix positions from root to the left are:

- (4) 0 root
 1 classifier: Ø, t-, l-, d-
 2 subjects: s- (1sg), ne- (2sg), íd- (1dp), h- (2dp)
 3 primary aspect/mode: ne- (perfective)
 wé- (optative)
 ghe- (progressive)
 4 conjugation markers: Ø, še-, ghe-, ne-
 5 secondary aspect: te- (inceptive)
 6 secondary mode: ú- (conative)

There are a number of reasons why these six categories are particularly worthy of mention at the outset. First of all, these categories determine inflectional characteristics of the verb paradigms. Secondly, the identity and relative order of these prefix categories have received considerable attention both from synchronic and diachronic perspectives. Thirdly, it is essential to understand the morphophonemic behaviours of these prefixes in order to understand the salient features of the verb structure, including the relationship between tone and segmental phonology.

1.1 Boundaries/levels

The distinction between conjunct boundary and disjunct boundary is well motivated for all Athapaskan languages in that phonological rules are sensitive to different boundaries, but the number of boundaries required of a given language or for all Athapaskan languages is not so well established. Rice (1983) postulated four boundaries to constrain major phonological rules. In this discussion, two of these boundaries are called disjunct boundary and the other two conjunct boundary.

	##: following word, incorporated PP, certain adv.
Disjunct	#: following certain adv. and thematic prefixes.
	+: following deictic subject or object prefixes.
Conjunct	-: following first six prefix positions.

It will be shown that some of the major phonological processes are sensitive to one of these boundaries, while others are not sensitive at all. It has been noted that some rules apply optionally across a certain boundary, indicating that the status of the boundary involved is rather unstable. It

seems that there is a certain degree of individual difference, but no details will be discussed here.

1.2 Epenthesis

As far as those rules discussed in this paper are concerned, there is no need for a distinction between word boundary and what has traditionally been called 'disjunct' boundary. Word initially, following an incorporated PP, or what I prefer to call a proclitic, epenthetic *h* and/or *e* is required. The boundary following these, ## is established. In the following and subsequent underlying representations, zero morphemes such as Ø-classifier, 3rd person subject, 3rd person direct object (other than 4p), etc. are not given.

- | | | |
|-------|---|--|
| (5 a) | ##s-tsagh → hestsagh
I-cry | 'I cry (imp)' |
| b) | ##se-gha##ne-d-yen → sahenjen
me-for-you-C-sing | 'Sing for me!' |
| c) | ##te-##s-ɬ-banê → tehesbanê
up-I-C-roll
cf. teyeɬbanê | 'I roll it up (imp)'

'he rolls it up' |
| d) | ##ji##ɬ-bens → jiheɬbenê
against-C-roll | 'he rolled it
against it (perf)' |

In (a), (c), and (d), there is no syllabic prefix to the right of internal ##, hence *he* is introduced by epenthesis. In (b), four other rules besides epenthesis are involved. The intervocalic *gh* of the incorporated PP is deleted feeding the lax vowel deletion (se-gha → se-a → sa); the stem-initial consonant undergoes D-effect; the subject prefix *ne-* metathesizes (ne → en), feeding h-epenthesis. Some details of these rules are discussed below.

The rule of metathesis and 12 forms in verb paradigms (e.g. *íd-d-yen* → *híjen* 'we sing') suggest that epenthetic *h* and *e* are introduced by two separate rules.

1.3 *ê*-voicing

The conjugation marker *êe*-, when not reduced to *ê* - or *ê* - (see 1.5), becomes *žê*- (or *ze*- after sibilant assimilation) in intervocalic position following a conjunct boundary, but not a disjunct boundary, i.e. the voicing rule is blocked in analogous position if the boundary left of *êe*- is # or greater, e.g.

(6) a) <i>êe</i> - after a disjunct boundary	b) <i>žê</i> - after a conjunct boundary
<i>šigwed</i> 'I stabbed him'	<i>nánežiqan</i> 'I sewed it'
<i>nišił?ex</i> (ni# 'theme' ...) 'I skinned it'	<i>ła tezesteł</i> 'I don't kick'
<i>násesjíd</i> (na# 'about' ...) 'I crawled'	<i>tezesjíd</i> 'I've started to crawl'
<i>tešilúy</i> (te##... 'up' ...) 'I've started to pull it up'	<i>nezesjud</i> 'I'm afraid'
	<i>nežinjud</i> 'you are afraid'

The voicing rule is not sensitive to the difference between the two disjunct boundaries, but the epenthesis rules are. Note that the voicing rule is blocked both after *na*# and *te*## 'up' (homophonous with *te*- 'inceptive') as shown above, but epenthesis is required after a proclitic, such as *te*##, *ji*## as

shown in (5c-d), but not after such adverbial or thematic prefixes as *ná#* 'about,' *ni#* 'thematic,' or *ts'i#* 'thematic,' e.g.

- (7) a) ná# b) ni#, ts'i#
 násjfd 'I'm crawling' nis'ex 'I skin it'
 náljfd 'he's crawling' nfl'éx 'we skin it'
 násbih 'I swim' ts'inžig 'you usually wake up'

1.4 *ghe*-Augmentation

The Chilcotin cognate of one of the better known phonological rules of Athapaskan is illustrated by the two paradigms given below:

- (8) a) Progressive
- | | | | | |
|----|-------------|----|------------------|-----------------------------|
| 1 | nadasbiɬ | <— | na#de-ghe-s-biɬ | 'I am swimming in a circle' |
| 2 | nadeghimbiɬ | <— | na#de-ghe-ne-biɬ | |
| 3 | nadabiɬ | <— | na#de-ghe-biɬ | |
| 12 | nadeghíbiɬ | <— | na#de-ghe-íd-biɬ | |
| 22 | nadahbiɬ | <— | na#de-ghe-h-biɬ | |
| 33 | najedabiɬ | <— | na#je-de-ghe-biɬ | |
- b) Perfective
- | | | | | |
|----|---------------|----|---------------------|----------------------|
| 1 | nadeteghibin | <— | na#de-te-ghe-i-bin | 'I swam in a circle' |
| 2 | nadeteghimbin | <— | na#de-te-ghe-ne-bin | |
| 3 | nadeteghimbin | <— | na#de-te-ghe-ne-bin | |
| 12 | nadeteghíbin | <— | na#de-te-ghe-íd-bin | |
| 22 | nadetahbin | <— | na#de-te-ghe-h-bin | |
| 33 | najeteghimbin | <— | na#de-te-ghe-ne-bin | |

The underlying representations given above assume other morphological and phonological rules that are discussed in

other subsections. For example, metathesis of underlying *ne-* to *en-* takes place before the augmentation rule applies in 2 form of the progressive and 2, 3, 33 forms in the perfective (see 1.5). In the perfective paradigm, 2 and 3 forms are homophonous because *ne*-perfective does not occur in 2 forms of the Ø/*t*-classifier verbs (see 2.3). It is also assumed that 1sg subject is marked by *i-* in the perfective paradigm. Putting these and other details aside, now consider the forms in which the augmentation has applied. In the progressive, it has applied in all forms except 2 and 12 forms. On the other hand, in the perfective paradigm, it has applied only in 22 form. One of the conditions to be specified in the structural description of this rule is the boundary between the two prefixes involved, which must be a conjunct boundary, i.e. + or - . The other condition is that what follows *ghe-* must be a consonant. Recall that *ne-* becomes metathesized (or the vowel of *ghe-* becomes *i*), so that the latter condition is not met where the rule fails to apply.

1.5 Metathesis and tensing

While the rule of metathesis itself is not sensitive to boundary, the tensing rule, which is fed by metathesis, applies only across the lowest boundary, i.e. "-". There is abundant evidence for metathesis of certain prefixes in the form *Ce* in Chilcotin and other related languages, particularly Carrier. The prefix in question includes at least *ne-* (2sg), *ne*-perfective/adjectival (in position 2), and *še*-conjugation marker.

Evidence for metathesis involving *ne-* (2sg) is provided by the fact that in nouns and postpositions, this prefix is basically *ne-*, although it may appear as *nen-* or *n-* depending on the stem initial segment (e.g. *nela* 'your hand', *nentsí* 'your head', *nadi* 'your older sister'), but in verbs it appears more frequently than not as *en-* (metathesized), although the data

contains one verb paradigm in which *ne-* shows up. Consider the following:

- (9) a) Imperfective
1 gást'in 'I do so'
2 gánet'in
3 gát'in
- b) Perfective
gághest'in 'I did so'
gághint'in
gághet'in
- (10) a) henjen 'you sing' cf. hesjen 'I sing'
b) henłts'ig 'you are in pain' cf. hests'ig 'I am in pain'
c) henzugh 'you scrape it' cf. heszugh 'I scrape it'
d) tehenłbanš 'you roll it up' (te##nełbanš)
e) sahenjen 'you sing for me' (segha##nejen)

While it cannot be explained why *ne-* is not metathesized in *gánet'in*, it provides unequivocal evidence for metathesis considering other forms in (10). One might propose that the vowel of *ne-* is lost in the absence of a conjunct boundary preceding the prefix, and then the same vowel (as well as *h*) is reintroduced by epenthesis. Needless to say, such an analysis loses the very rationale for epenthesis.

Furthermore, the proposed rule of metathesis provides a natural explanation for the appearance of a tense vowel after a conjunct prefix as in the perfective forms, i.e. *ghe-ne* → *ghe-en* → *ghin*. As shown by 2 and 3 forms of (8b), two nonback lax vowels become a nonback tense vowel (*i* being the only nonback tense vowel in Chilcotin), while *e* of *en-* in (10) remains as *e* because there is no other vowel preceding it. Following are further examples in which *i* derives from the merger of two lax vowels across a conjunct boundary.

- (11) a) naghinjen 'you sang again' cf. naghesjen 'I sang again'
ghinyán 'you ate it' cf. ghehyán 'you (pl) ate it'

- b) **našimbin** 'you swam' cf. **našebin** 'he swam'
šingwed 'you poked him' cf. **šehgwed** 'you (pl)
 poked him'
 c) **ninchágh** 'you are big' cf. **neschágh** 'I'm big'
ninłtsen 'you are stinking' cf. **nełtsen** 'it is
 stinking'

The rules of metathesis and tensing also explain, at least in part, the apparently aberrant behaviour of *še-* as shown by the following two paradigms.

- (12) a) de-...Ø-ts'ex 'open-mouthed' b) Ø-bin 'swim'
 še-perfective (neuter theme)⁴ še-inceptive perfective
 (active theme)
- | | | | | | |
|----|------------|--------------------|----|----------|----------------------------|
| 1 | dežits'ex | 'I'm open-mouthed' | 1 | težibin | 'I've
started swimming' |
| 2 | dežints'ex | | 2 | težimbin | |
| 3 | dižts'ex | | 3 | tižbín | |
| 12 | dežits'ex | | 12 | težíbín | |
| 22 | dežehts'ex | | 22 | težehbin | |
| 33 | jedižts'ex | | 33 | jetižbín | |

In short, *e-e* becomes *i*, while *e + e* becomes *e*, which suggests that *e* is bonded with another *e* across the lowest boundary, while *e* is deleted in the presence of another vowel across the boundary + or higher. The latter case is essentially identical to the rule that deletes a lax vowel next to a full vowel regardless of the boundary.

There is only one exception to this rule in that *je +* behaves like *je-* in neuter themes, e.g. *jinzun* (<-- *je-en-zun* <-- *je-ne-zun*) 'they are good' and *jinchágh* 'they are big.' No other comparable forms are found in active themes.

1.6 Other general rules

There are several other general rules that are not sensitive to boundary. These include the lax vowel deletion just mentioned, sibilant assimilation which is one of the better known Athapaskan rules, n-reduplication which is added to *ne-* (i.e. *ne-* → *nen-*) of any morphemic identity, cluster reduction, among others. These rules are not directly relevant to the main topics of discussion in this paper, but they are necessary to understand the data presented in this paper. These rules are illustrated by the following examples.

(14)

a) \check{V} -deletion

sígwed<—se-íd-gwed 'we poked him'
natasjen<—ne-gha##te-ghe-s-d-yen
 (after gh deletion in PP)
 'I'm going to sing for you'

b) n-Reduplication

nenqi<—ne-qi (before a stop, affricate, or nasal)
'your foot'
nentasʔinɿ<—ne-te-ghe-s-ɿ-ʔinɿ 'I'm going to see it'
cf. ninɿʔin 'you see it,' neghiɿʔin 'I saw it'

c) Sibilant assimilation⁶

násesjíd <— ná#se-s-jíd	'I crawled'
šeži <— se-ži	'my mouth'

d) $1/t$ -deletion (cluster reduction)

násbánê ← ná#s-l-bánê	'I roll it'
cf. nánlbánê	'you roll it'
yastig ← ya#s-ł-tig	'I talk'
cf. yanłtig	'you talk'

2. Prefix categories and verb paradigms

Having provided a general discussion on boundaries and phonological rules in the preceding section, I shall concentrate on the morphemic identity from both synchronic and diachronic perspectives of the six prefix categories and their roles in defining the most common verb paradigms, namely the imperfective, perfective, progressive, and optative.

2.1 Classifiers

All three Athapaskan classifiers (not counting zero) are well preserved in Chilcotin, although they are subject to various phonological rules. Because of a voicing/devoicing rule, *l-* may appear as [ʔ] or *ɬ* - as [l], and both may be deleted between consononants, for example:

(15 a) <i>ya-...ɬ-tig</i> 'talk (imperfective)'		b) <i>ne-...l-diɬ</i> 'munch (imperfective)'	
1	<i>yastig</i>		<i>nesdiɬ</i>
2	<i>yanɬtig</i>		<i>nildiɬ</i>
3	<i>yaɬtig</i>		<i>neldiɬ</i>
12	<i>yaltig</i>		<i>nɪldiɬ</i>
22	<i>yaɬtig</i>		<i>neɬdiɬ</i>
33	<i>yajeɬtig</i>		<i>jeneɬdiɬ</i>

Note that *l-* and *ɬ-* are deleted after *s-* '1'; *ɬ-* becomes voiced in 12 forms (after *id-* '12'), while *l-* becomes devoiced in 22 forms (after *h-* '22'); elsewhere underlying *l-* and *ɬ-* are intact. *l-* is also devoiced in 3 and 33 forms of perfective paradigms marked by *ʂe*-conjugation marker; the phonological motivation of this process is not well understood (see 2.4).

The presence of d-classifier is less apparent because of the well-known D-effect, i.e. it is deleted before a stop/affricate

or becomes merged with a continuant, resulting in an affricate which is not distinguishable from an underlying affricate. The presence of d-classifier is shown by the following two optative paradigms.

(16 a) Optative (Ø-classifier)	b) Iterative Optative (d-classifier)
1 <i>ŵessú</i> 'I will be good'	1 <i>naŵwasdzú</i> 'I will be good again'
2 <i>ghunzú</i>	2 <i>naŵundzú</i>
3 <i>ŵezú</i>	3 <i>naŵwedzú</i>
12 <i>ghúzù</i>	12 <i>naghúdzù</i>
22 <i>ŵehsú</i>	22 <i>naŵehdzú</i>
33 <i>juzú</i>	33 <i>najudzú</i>

Unlike the above two paradigms, the two perfective paradigms below (non-iterative vs. iterative) show no alternating stem-initial consonants that would suggest underlying d-classifier, however, there are three good reasons to analyze the stem initial *j* as d- (classifier) plus a continuant *y* or *sh*.⁷

(17 a) Perfective	b) Iterative perfective
1 <i>ghesjen</i> 'I sang'	1 <i>naghesjen</i> 'I sang again'
2 <i>ghinjen</i>	2 <i>naghinjen</i>
3 <i>ghejen</i>	3 <i>naghejen</i>
12 <i>ghíjén</i>	12 <i>naghíjén</i>
22 <i>ghehjen</i>	22 <i>naghehjen</i>
33 <i>jajen</i>	33 <i>najajen</i>

First, the iterative prefix *na-* requires a d- or l-classifier (a pan-Athapaskan phenomenon). Obviously, d-classifier is present in all paradigms including the iterative paradigms. Secondly, the above verb stem apparently is related to the noun stem *shen* 'song' or *-yen* (e.g. *seyen* 'my song'). Finally, and more importantly, the effect of d-classifier is just

as apparent, or more so, in the phonology of the three other conjunct prefixes (i.e. subject prefixes, *ne*-perfective prefix, and conjugation markers) as in the stem initial, the details of which are discussed in the other sections (see below).

2.2 Subject prefixes and *ne*-perfective

The subject prefixes that are dealt with in this section are the speech participants (1st person and 2nd person), excluding all categories of third person subject, which is either unmarked (zero) or marked by prefixes beyond the six positions (e.g. *ts'e-* 'unspecified' and *je-* '3p duoplural').

The four subject prefixes listed in (4) are easy to identify in most verb paradigms as well as in nouns and postpositions, but there are other verb paradigms in which 1sg is marked by *i-* (not by *s-*) or 3sg and 3dp are apparently marked by *in-* (not unmarked) in position 2. The subject marking of these paradigms is dealt with in connection with the so-called *ne*-adjectival/perfective of position 3.

Consider the following imperfective (with a zero conjugation marker) and perfective (with *ghe*-conjugation marker) paradigms of the verb theme represented by *gá... Ø-t'in/t'in* 'do':⁸

(18 a) Imperfective	b) Perfective
1 <i>gást'in</i>	<i>gághest'in/gáást'in</i>
2 <i>gánet'in</i>	<i>gághint'in</i>
3 <i>gát'in</i>	<i>gághet'in</i>
12 <i>gát'in</i>	<i>gághít'in</i>
22 <i>gáht'in</i>	<i>gágheht'in</i>
33 <i>gájet'in</i>	<i>gájat'in</i>

The underlying representation of *s-* (1sg) is intact in both paradigms above; so is *h-* (2pl). The subject prefix *íd-* is deleted in the imperfective paradigm by two rules: one deleting *i* after *a*, and another deleting *d* before a stop. In the perfective paradigm, the vowel of the same prefix survives

following the deleted lax vowel of *ghe-* (ǃ-deletion), while *d* is deleted by the same rule as in the imperfective paradigm. The underlying shape of *ne-* (2sg) is intact in the imperfective, but it is metathesized (feeding and tensing rule) in the perfective as mentioned in section 1. The underlying form of *h-* (2pl) is intact before Ø or d-classifier, but it is deleted before l-classifier (after devoicing it) or ɬ-classifier. The third person duoplural forms are marked by *je +*, which occurs in the 'deictic' subject position. After this prefix, *ghe-* augmentation applies as shown in the above perfective paradigm. A more interesting phonological process is tone reversal in 12 forms, which is discussed in section 3.

2.3 *ne-* perfective (< *ñə-)

The synchronic and diachronic status of this morpheme for Athapaskan in general has drawn considerable attention in recent studies. Krauss & Leer (1981) identified the prefix as '**nə-* adjectival' in neuter themes, but the morphemic identity of the reflex of this morpheme in many contemporary languages has never been well defined. In Chilcotin, *ne-* appears in many neuter or 'adjectival' themes as shown in (19a) but in many other neuter themes such as in (19b) and (20b) *de-* (instead of *ne-*) appears.

- | | | | | | |
|--------|----------|--------------|----|----------|------------------------|
| (19 a) | nezun | 'it's good' | b) | delbagh | 'it's light-coloured' |
| | nenchágh | 'it is big' | | deltsugh | 'it's yellow' |
| | nentíl | 'it is wide' | | detš'iny | 'it's hard (to break)' |
| | nełtsen | 'it stinks' | | detsen | 'it is dirty' |

In the following paradigms, *ne-* and *de-* constitute an obligatory element in the respective theme, suggesting that *ne-* is thematic in the same way as *de-*.

(20 a)	1	neschágh	'I'm big'	b)	destsen	'I'm dirty'
	2	ninchágh			dintsen	
	3	nenchágh			detsen	
	12	níchàgh			dítsén	
	22	nehchágh			dehtsen	
	33	jinchágh			jedetsen	

The morphophonemic behaviours of *ne-* and *de-* in 33 forms, however, suggest that these two prefixes do not belong to the same category although they appear to be mutually exclusive in the above paradigms. In 33 of (20a), *ne-* undergoes metathesis, feeding tensing (see 1.5) (i.e. *je-n* → *je-en* → *jin*), whereas *de-* in (20b) never metathesizes. Clearly, both paradigms above are unmarked for conjugation (i.e. Ø-conjugation marker), but it is impossible to predict the distribution of the so-called perfective (or 'adjectival') prefix in what are called imperfective paradigms.⁹

In both neuter and active themes, the perfective prefix in question appears most consistently in the perfective paradigm in which the conjugation marker is *ghe-* and the classifier is either zero or *t.*. Consider the two sets of paradigms:

(21) 'be good' (neuter)

a) Imperfective	b) Perfective
1 neszun 'I'm good'	ghizú 'I was good'
2 ninzun	ghinzú
3 nezun	ghinzú
12 nídzún	ghídzù
33 jinzun	jeghinzú

(22) 'shake 0' (active)

a) Imperfective	b) Perfective
1 hesghad 'I shake it'	ghighad 'I shook it'
2 henghad	ghinghad
3 yeghad	yeghinghad

12	híghád	ghíghad
22	hehghad	ghehghad
33	jiyeghad	jiyeghinghad

For the sake of argument, let us assume that the only formal difference between the two paradigms of the neuter theme in (21) is that the imperfective paradigm is marked by no conjugation prefix (zero) whereas the perfective is marked by *ghe-*. The allomorphy involving the perfective *ne-* is somewhat transparent in the imperfective, given metathesis and tensing rules, but the same is not true for the perfective. First of all, there is no plausible synchronic rule to derive *i* of 1sg form in the perfective from *ne-* plus *s-* (1sg), although *i-* might be considered a portmanteau morpheme representing both the subject and perfective prefixes rather than a single morpheme representing only the 1sg subject. Second, note that the 2, 3, and 33 forms (except for *ye-* (4p) and *ji-* (3dp)) are identical. In 3 and 33 forms, the sequence *ghin* derives from underlying *ghe-* and *ne-* via metathesis and tensing, but obviously another process is involved in the derivation of *ghin* in 2sg form whose underlying representation should be *ghe-ne-ne-* (conjugation marker-perfective-subject). Given this underlying representation of the three morphemes concerned, how does the string become *ghin* on the surface? Considering the fact that *ne-* is absent in 12 and 22 forms, it is quite reasonable to assume that there is a rule to delete the perfective prefix provided that the paradigm has the prefix in the underlying representations of all forms. This is a likely case from a diachronic point of view, but not necessarily the best or only analysis from a synchronic point of view. In an alternative synchronic analysis, it is perfectly reasonable to assume that there is no perfective prefix in any form of the paradigm where *i-* in 1 and *ne-* in 3 and 33 forms are subject prefixes alternating with *s-* and \emptyset respectively. If **ñə-* existed historically in every form of the perfective paradigm (a very reasonable assumption), it has been restructured in Chilcotin from a synchronic point of view. Aside from the neuter

paradigms where the perfective is labelled as *ne*-adjectival, the synchronic trace for the perfective prefix is greatest in the active paradigms whose conjugation marker is *ghe*- and classifier is zero or *ɬ*- as exemplified by (22). There is no trace whatsoever of the prefix in question in the active paradigms with either *l*- or *d*-classifier, as demonstrated by the following paradigms.

(23) 'cough' with *l*-classifier

a) Imperfective	b) Perfective
1 desqwes	'I cough' dasqwes (de-ghe-s- <i>l</i> -qwes) 'I coughed'
2 dinlqwes	deghinlqwes
3 delqwes	dalqwes
12 dɪlqwés	deghɪlqwés
22 deɬqwes	daɬqwes (de-ghe-h- <i>l</i> -qwes)
33 jedelqwes	jedalqwes

(24) 'drink' with *d*-classifier¹⁰

a) Imperfective	b) Perfective
1 ʔesdan 'I drink (something)'	ʔasdan (ʔe-ghe-s- <i>d</i> -an) 'I drank'
2 ʔindan	ʔeghindan
3 ʔedan	ʔadan
12 ʔídán	ʔeghídán
22 ʔehdan	ʔahdan
33 ʔejedan	ʔejedan

The classifier *l*- remains intact in most of the forms in (23) and *d*- is intact before a stem-initial zero consonant in every form of (24). But the morphophonemics of the conjunct prefixes before the two classifiers are identical. There is no trace of *ne*-perfective in the above two perfective paradigms, nor are there any alternative subject prefixes for first person singular and third person forms. The morphophonemic behaviour of the

conjunct prefixes before d/l-classifiers is quite distinct from that of those before zero/ɬ-classifiers. Diachronically, the process involving the perfective prefix is rather clear in that it is completely deleted in the d/l-classifier verbs, but the synchronic status of its reflexes in the Ø/ɬ-classifier verbs is less obvious.

There is no evidence for *ne*-perfective in paradigms with *še*-conjugation marker except for *i*-, which appears in the subject position in the 1sg forms of the Ø/ɬ-classifier verbs as exemplified by the ɬ-classifier paradigm and d-classifier paradigms below.

(25 a) 'ride a horse' with ɬ-	b) 'feel cold' with d-
1 našiltéž	nasesdlih
2 našinɬtéž	našindlih
3 našeɬtéž/naɬtèž ¹¹	našehdlih
12 našiltéž	našidlih
22 našeɬtéž	našehdlih
33 najeɬtéž	naješdlih ¹²

The segments that are of interest here are *še*- (*se-i*) before Ø/ɬ-classifiers and *s-es*- (*še-s*; cf. sibilant assimilation) before l/d-classifiers in 1sg forms. The pattern of alternation here is identical to the one observed in the paradigms with the *ghe*-conjugation marker. There is, however, no other form in the *še*- conjugation paradigms that reflects any trace of *ne*-perfective.

My data on *ne*-conjugation paradigms are not rich, but the following two paradigms suggest that the morphophonemic pattern of the conjunct prefixes of the *ne*-conjugation paradigm is identical to that of the *ghe*-conjugation paradigm.

(26 a)	-tsi 'to fire at' with Ø-	b)	-bin 'swim' with Ø-
1	húnitsi ¹³		nibin
2	húnintsi		nimbin
			(ne-ne-bin)
3	yúnintsi		nimbin
12	húnítsí		níbín
22	húnehtsi		nehbin
33	jíyúnintsi		jenimbin

The prefix structures of the above two paradigms are identical except for the conative prefix *ú-* (preceded by epenthetic *h*) in (26a). The presence of *i-* in 1 forms, the homophony of the prefixes in question (i.e. *nin-* in *ne-* conjugation paradigms and *ghin-* in *ghe-* conjugation paradigms) in 2, 3, and 33 forms, and the presence of *in* (in 3 and 33 forms) before zero or *ɬ*-classifier are common phonological features indicative of *ñə*-perfective in the *ne*-conjugation and *ghe*-conjugation paradigms. The two sets of paradigms presented below summarize and illustrate the pattern of phonological configuration of the conjunct prefixes including reflexes of *ñə*-perfective. The first theme 'roll 0' representing the Ø/*ɬ*-classifier verbs is given in three paradigms: Ø-imperfective, *ghe*-perfective, and *še*-perfective. Adverbial prefixes are put in parentheses. The second theme 'be shy', representing the *d/l*-classifier verbs, is given in *ne*-imperfective, *ghe*-perfective, and *še*-perfective.

(27) *ɬ*-báns̃/-bañs̃/-beñs̃ 'roll 0'

a) Ø-imperfective	b) <i>ghe</i> -perfective	c) <i>še</i> -perfective
1 (te)hesbáns̃	(gweda)ghíɬbañs̃	(ji)šíɬbeñs̃
2 (te)henɬbáns̃	(gweda)ghínɬbañs̃	(ji)šinɬbeñs̃
3 (te)yeɬbáns̃	(gweda)yeghínɬbañs̃	(ji)yéɬbeñs̃ ¹⁴

12 (te)hílbàn̂s	(gweda)ghílbān̂z	(ji)šílbén̂s
22 (te)hełbān̂s	(gweda)ghéłbān̂z	(ji)šełbén̂s
33 (te)jiyełbān̂s	(gweda)yeghínłbān̂z	(ji)jiyełbén̂s ¹⁵

(28) u-...d-yan/-yá/-yád 'be shy'

a) ne-imperfective	b) ghe-perfective	c) še-perfective
1 húnesjan 'I'm shy'	húghesjá 'I was shy'	húzesjád 'I've just become shy'
2 húninjan	húghinjá	húžinjád
3 húnján	húghejá	húžjád
12 húnjàn	húghjà	húžjád
22 húnehjan	húghehjá	húžehjád
33 júnján	húghejá	júžjád

Putting aside tone perturbation (discussed in section 3), the phonological behaviours of the three conjugation markers (*ne-*, *ghe-*, and *še-*) can be summarized as follows. *ne-* and *še-* pattern alike in that both may undergo metathesis (eventually losing vowel *e* on the surface), and *ne-* and *ghe-* pattern alike in showing reflexes of **ñə*-perfective in certain forms of the paradigms with Ø/ł-classifier.

Other verb paradigms that show what might be a reflex of **ñə*-perfective include the transitional paradigm and negative paradigm. In the transitional paradigm, *i-* shows up in position 2 of 3 and 33 forms. Compare the following paradigms:

(29) a) Imperfective	b) Transitional
1 desdel 'I'm red'	desdíl 'I turned red'
2 dindel (de-ne-1-del)	dindíl
3 deldel	dildíl

12	díldél	dídíl
22	dełdel	dełdíl
33	jedeldel	jedildíl

Although the classifier of the above paradigms is *l-*, classifiers may have nothing to do with the appearance of *i-* considering such forms as *tik'ál* 'it turned white' (cf. *tek'el* 'it is white') and *tít'íz* 'it turned black' (cf. *test'es* 'it is black'), the paradigms of which suggest that the classifier is Ø.

Among other characteristics of negation in Chilcotin is the use of conjugation marker *še-* in certain (but not all) negative paradigms. This conjugation prefix, which is also found in Carrier and Ahtna (Kari 1979) and elsewhere, suggests that Chilcotin verb morphology is one of the most conservative. In other negative paradigms which are not marked by *še-*, however, prefix *i-* appears in the subject position of 3 and 33 forms just as in the transitional paradigm. Compare the following affirmative and corresponding negative paradigms below:

(30) 'sing'	I Affirmative	II Negative
a) Imperfective		
	1 hesjen	ła sesjen
	2 henjen	ła šinjen
	3 hejen	ła hešjen
	12 hījén	ła šfjén
	22 hehjen	ła šehjen
	33 jejen	ła ješjen
b) Perfective		
	1 ghesjen	ła hesjínł
	2 ghinjen	ła henjínł
	3 ghejen	ła hijínł
	12 ghījén	ła hífjínł

22 ghehjen	ʔa hehjinl
33 jajen	ʔa jijnl

The negative particle *ʔa* occurs in all negative constructions, but the conjugation marker *ʂe-* appears in most cases where the corresponding affirmative paradigm is not marked by *ʂe-*. However, in the negative perfective paradigm in which *i-* occurs in 3 and 33 forms, there is no *ʂe-* conjugation marker. Instead, an enclitic (*-l* 'neg') is attached. This enclitic may be responsible for the tensing of the stem vowel with marked tone. The negative enclitic is not always phonetically realized, however, probably being deleted by a phonological process. In any event, two things may be said about the negative construction. First, the conjugation markers *ghe-* (perhaps *ne-* as well) and *ʂe-* are mutually exclusive of the affirmative and negative paradigms. Secondly, the prefix *i-* occurs in the perfective (negative) paradigm, which is marked by an enclitic rather than *ʂe-*. This vocalic prefix in the negative paradigms and apparently the same formative in the transitional paradigms occurs in 3 and 33 forms, i.e. where prefix position 2 is null. Similarly, *ne-* (reflex of **ñə-*) also occurs in 3 and 33 forms combined with a non-zero conjugation marker being realized as *Cin* (where *C* is *gh*, *ʂ*, or *n*) in *Ø/t*-classifier verbs. In short, the reflex of **ñə-* is most evident in forms in which position 2 is null and position 1 (classifier) was nonsyllabic in Proto-Athapaskan (i.e. **Ø/t* instead of **t ə/də-*).

2.4 Conjugation marker and primary aspect/mode prefixes

In the preceding section the reflexes of **ñə-* (perfective) is treated separately in order to emphasize its relationship to

subject marking in a synchronic analysis. From a historical perspective, this prefix should be treated along with other prefixes that occur in position 3. In Chilcotin, there are two other prefixes that belong to position 3 category, *we*-optative and *ghe*-progressive (which is different from *ghe*-perfective in position 4).

Before discussing the position 3 prefixes and conjugation markers in position 4, I shall clarify some terminological inconsistencies which have been mentioned frequently by others as well. The recognition of two prefix positions for what has been called mode and aspect is well justified, but labelling them as 'mode' for position 3 and 'conjugation marker' for position 4 needs further clarification. The term 'conjugation marker' is sufficiently neutral so as to avoid confusion. I have accepted this usage referring to position 4 prefixes, *ghe*-, *še*-, and *ne*-. Referring to position 3 prefixes as 'mode', however, is still inadequate in that the only mode category is optative and the others are aspect categories. Since I recognize *ghe*-progressive as a position 3 prefix, I have now decided to call the position 3 prefix 'primary aspect mode' (while others in this book call it 'mode'). For Chilcotin, I also recognize a secondary aspect/mode position immediately preceding position 4 (conjugation markers) in order to accommodate an additional aspect prefix *te*- (inceptive) in position 5, and a mode prefix, *ú*-(conative), in position 6. The table below summarizes the aspect/mode prefix categories and their labels:

Table 1
Aspect/mode Prefix Categories

6	5	4	3
secondary mode	secondary aspect	conjugation marker	primary aspect/mode
ú-conative	te-inceptive	ê- ghe- ne-	ne-perfective ghe-progressive wê-optative

Rice & Hargus (in this volume) recognize for Slave four conjugation markers, including a zero in position 4 (position 11 in their labelling) *n*, *s*, *gh*, and \emptyset , while they recognize three 'mode' prefixes in position 3: *gho*-optative, *n̄*-perfective, and a zero. In their analysis, *ghe*-progressive is treated as a conjugation marker in position 4 rather than a 'mode' in position 3, which may co-occur with any of the three mode prefixes. By establishing a zero for both position 4 and position 3 and excluding *ghe*-progressive from position 3, the configurations of the two positional categories become completely symmetrical, i.e. any of the four conjugation markers may be combined with any of the three 'mode' prefixes, producing a total of twelve paradigms. If *ghe*-progressive is recognized for position 3 in Slave, the symmetry would be destroyed because *ghe*- would co-occur only with \emptyset conjugation marker. Since optative may be marked by *n*-conjugation and *s*-conjugation as well as *gh*-conjugation in Slave (see Rice 1985), the symmetrical arrangement of the two prefix categories is justifiable for Slave; however, such an analysis is not adequate for Chilcotin. For optative, only *ê*-conjugation is attested in negative constructions in Chilcotin. There is also unequivocal evidence for *ghe*-progressive which is distinct from *ghe*-perfective.

Consider the prefix strings *ghes-* (ghe-s), *ghin-/ghim-* (ghe-ne), and *ghe-* (ghe-Ø) in 1, 2, and 3 forms, respectively, in the following progressive paradigms which are marked by both the *ghe-* prefix and *-t* suffix.

- | | |
|-----------------------|-----------------|
| (31 a) Ø-qił 'paddle' | b) Ø-bił 'swim' |
| 1 ghesqił | ghesbił |
| 2 ghinqił | ghimbił |
| 3 gheqił | ghebił |

The prefix strings involving *ghe*-progressive are different from the prefix strings involving *ghe*-conjugation marker, as demonstrated by the two paradigms of the same verb:

- | | |
|------------------------------------|-------------------------|
| (32) ł-benŝ/-banŝ 'roll 0' | |
| a) Progressive | b) Perfective |
| 1 ghesbenŝ | (gweda) ghíłbanŝ |
| 2 ghinłbenŝ | ghínłbanŝ |
| 3 yałbenŝ (ye-ghe-ł-s-benŝ) | yeghínłbanŝ |
| 12 ghíłbénŝ | ghíłbánŝ |
| 22 ghełbénŝ | ghéłbánŝ |
| 33 jiyałbénŝ | jiyeghínłbánŝ |

As shown in the preceding section, there are two sets of prefix strings for perfective paradigms marked by *ghe-*, one for the Ø/ł-classifier verbs and another for the d/l-classifier verbs. The former is as shown above (32b), and the latter is identical to the progressive strings shown above (32a). There is, however, only one set of prefix strings for the progressive paradigm. In other words, prefix strings of the perfective paradigm for the d/l-classifier verbs are identical to the prefix strings of the progressive paradigms for verbs of any classifier. This difference alone justifies the establishment of

ghe-progressive in contradistinction to *ghe*-perfective. But there is more evidence. Compare the affirmative and negative forms of the progressive paradigms of the verb 'swim' below:

(33) -bił 'swim' (Progressive)

a) Affirmative	b) Negative
1 ghesbił	ła sasbił (še-ghe-s-bił)
2 ghimbił	ła šeghimbił
3 ghebił	ła ghešbił
12 ghíbił	ła šeghíbił
22 ghehbił	ła šehbił
33 jabił (je-ghe-bił)	ła jašbił

It is apparent that the only difference between the two paradigms is the presence or absence of *še*. The order of *š*-conjugation marker and *ghe*-progressive in all forms of the negative paradigm except 3 and 33 forms suggest that *ghe*- is in position 3 and *še*- in position 4, while the occurrence of *še*- elsewhere as *š*- in third person forms should be accounted for by a rule of metathesis. This metathesis also occurs in the optative paradigm, suggesting that *ghe*-progressive and *wé*-optative belong to the same category, i.e. position 3 (see (35))

A third piece of evidence that the *ghe*-progressive is in position 3 and distinct from *ghe*-conjugation marker in position 4 is provided by the paradigm that I prefer to call inceptive-progressive, the cognates of which in other languages are often called 'future'.¹⁶ Compare the affirmative and negative counterparts of the following inceptive-progressive paradigms.

(34) -teʔ 'kick' Inceptive-Progressive

a) Affirmative

- 1 tasteʔ
 2 teghanteʔ
 3 tateʔ
 12 teghátéʔ
 22 tahteʔ
 33 jetateʔ

b) Negative

- ʔa tezasteʔ
 ʔa težanteʔ
 ʔa tašteʔ
 ʔa tažátéʔ/težeghátéʔ¹⁷
 ʔa težahteʔ
 ʔa jetašteʔ

From a strictly synchronic point of view, what occurs in position 3 of the above paradigms may be considered different from *ghe-* progressive in that it appears as *gha-* rather than *ghe-*. From a historical point of view, however, I believe the vowel has developed by analogy as a sort of paradigm regularity. Note that *a*, which occurs in all forms of the paradigm, derives from *e-ghe-* by a well-known Athapaskan rule (*ghe-* augmentation) except in 2 and 12 forms. In other words, *ghe-* augmentation does not apply in 2 and 12 forms because what follows *ghe-* in these two forms is a vowel, not a consonant. Given that the position 3 prefix is *ghe-*, the surface forms of 2 and 12 would be **teghinteʔ* and **teghítéʔ*, respectively. I am suggesting that these are the only forms which do not have the surface *a* derived from *e-ghe-* and it is in these forms that *i* changed to *a* by analogy or paradigm regularity. In a synchronic analysis, however, the prefix in question may be considered to have two allomorphs, *gha-* in 2 and 12 forms and *ghe-* elsewhere. In an alternative analysis, however, another prefix distinct from *ghe-* progressive may be recognized. This alternative will be considered below.

Considering *gha-* in 2 and 12 forms, the underlying shape of the prefix in question may be postulated as *gha-*. Given this representation, other forms in the paradigm undergo two well-known processes: one that deletes intervocalic *gh*, and

the other that deletes a lax vowel next to a tense vowel, as illustrated by the following derivations.

te-gha-s-teʔ	underlying	(ʔa)	te-ŝe-gha-s-teʔ
te-a-s-teʔ	gh-deletion		te-ŝe-a-s-teʔ
t-a-s-teʔ	Ŷ-deletion		te-ŝ-a-s-teʔ
	Other Rules		
tasteʔ		(ʔa)	tezasteʔ

However, there are two problems with this analysis. First, the *gh*-deletion has to be further constrained, perhaps by rule ordering, so that *gh* in 2 and 12 forms be blocked from deleting. Second, if *gha*- is postulated along with *ghe*-progressive as a position 3 prefix, a further constraint should be specified with respect to *gha*- since it occurs only if *te*- is also present in the paradigm, although the latter is not so restricted.

In either analysis, however, it is clear that Chilcotin has *ghe*-progressive in position 3, which is distinct from *ghe*-conjugation marker in position 4. The optative paradigm is marked by *ŵe*- in the affirmative and *ŝe*-*ŵe*- in the negative. While no optative forms with *ne*- or *ghe*-conjugation marker has been attested, the presence of *ŝe*-conjugation marker in the negative clearly indicates that *ŵe*-optative is in position 3. Compare the affirmative and negative forms of the optative paradigms below. The order of *ŝe*- and *ŵe*- and their metathesis in 3 and 33 forms in the optative paradigms are exactly the same as the order of *ŝe*- and *ghe*- and the metathesis in 3 and 33 forms in the progressive paradigm. This structural parallelism between the progressive and optative paradigms further supports the view that *ghe*- progressive and *ŵe*-optative belong to the same prefix category, i.e. position 3.

(35) d-yen 'sing' (Optative)¹⁸

a) Affirmative	b) Negative
1 <i>wesjen</i>	<i>susjén</i> (<i>ê-sê-we-s-d-yen</i>)
2 <i>ghunjen</i>	<i>êghunjén</i> (<i>ê-sê-we-ne- ...</i>)
3 <i>wèjen</i>	<i>wêsjén</i> (<i>ê-sê-we- ...</i>)
12 <i>ghújén</i>	<i>êghújén</i>
22 <i>wèhjen</i>	<i>êshjén</i>
33 <i>jujen</i>	<i>juêsjén</i>

Putting aside details of the morphophonemic rules involved in the negative paradigm given above, it should be pointed out that phonologically *ê-sê-* in the affirmative is different from *ê-sê-* in the negative for two apparent reasons. In the affirmative paradigm, it may be reduced to *ê-* or *zê-* losing its vowel under appropriate conditions, but in the negative paradigm, the reduced form of the conjugation marker is always voiceless. Second, the loss of *e* or metathesis of it (see section 3) imparts tone reversal usually in the stem, but sometimes in the immediately preceding prefix vowel as well. This tone reversal is not observed in analogous conditions in the negative paradigm.

The morphological metathesis is not applicable to *ê-sê-* in the affirmative paradigm, simply because *ê-sê-* conjugation marker never occurs in the progressive or optative paradigms. The phonological differences cannot be explained for the moment, but there is no compelling reason to establish two different conjugation markers since the alternations are mutually exclusive of the affirmative and negative paradigms.

Incidentally, this optative paradigm provides further evidence for metathesis and tensing rules. Considering 1 and 3 forms of the affirmative paradigm, it is reasonable to postulate *wè-* (*ghwè-*) as the underlying representation of the optative prefix. How does it then change to *ghu-* or *u-* in other forms? From the 12 form of (35), whose underlying

representation is *we-íd-d-yen*, the feature [+round] is transferred to the tense vowel where the lax vowel is deleted, i.e. *ŵ* becomes unrounded only if followed by a tense vowel which becomes rounded. This means that in the 2sg form, *ne-* (2sg) becomes metathesized feeding the tensing rule, the outcome of which becomes rounded, i.e. *we-ne-jen* → *we-en-jen* → *wi-n-jen* → *ghu-n-jen*. The derivation of *jujen* and *susjen* involves gh-deletion and tensing rules, i.e.:

je+ <i>ŵe</i> -jen	input	<i>ŝe-ŵe-s-jen</i>
je+gho-jen	rounding transfer	<i>ŝe-gho-s-jen</i>
je+o-jen	gh-deletion	<i>ŝe-o-s-jen</i>
ju-jen	tensing	<i>ŝu-s-jen</i>
N.A.	s-assimilation	<i>su-s-jen</i>
jujen		<i>susjen</i>

The tensing rule shown above is slightly different from the previous case in that one of the two lax vowels is rounded (and back); for this reason the outcome of the tensing rule is *u* instead of *i*. In short, the appearance of the tense vowel *u* in the optative paradigm is phonetically well motivated where it derives via metathesis and tensing.

To summarize the configurations of the conjugation markers and the primary aspect/mode prefixes, an interesting pattern emerges although there is no perfect symmetry. While the reflexes of **ñə*--perfective co-occur with *ghe-* and *ne-* conjugation markers in the Ø/*ɬ*-classifier verbs, *ghe-* progressive and *ŵe*--optative co-occurs with *ŝe*--conjugation marker in the negative paradigm of any verb:

4

3

Conjugation markers

Primary aspect/mode

**ghe*-progressive*še*- _____ Negative _____*we*-optative*ghe*-

_____ Affirmative _____

**ñə*-perfective (reflexes)*ne*-

2.5 Secondary aspect/mode prefixes

The relative positions of *te*- (inceptive) and *ú*- (conative) are seen in the examples given below.

(36 a) *sútałqeł* (*se+ú-te-ghe-ł-qeł*) 'he's going to poke me'

b) *nútasteł* (*ne+ú-te-ghe-s-teł*) 'I'm going to kick you'

These two prefixes are called secondary aspect/mode for two reasons. As shown above, *te*- forms a secondary progressive, i.e. inceptive-progressive, on the basis of the progressive paradigm. It also forms a secondary perfective, i.e. inceptive-perfective, on the basis of the *še*-perfective paradigm. Second, both *te*-inceptive and *ú*-conative rarely occur alone (i.e. without a position 3 or 4 prefix), and when they do, they are more 'thematic' than aspectual or modal, both morphologically and semantically. Compare the perfective (a) and inceptive-perfective (b) paradigms below:

(37) -bin 'swim' (perfective)

a) perfective with *še-* b) inceptive-perfective with *te-še-*

1	nášbin	'I swam'	težibin	'I've started to swim'
2	nášimbin		težimbin	
3	nášebín		tižbín	
12	nášibin		težibin	
22	nášehbin		težehbin	
33	náježbin		jetžbín	

The prefix *ná#* in (a) is considered 'adverbial' in the sense that it is not an obligatory element for the theme, as demonstrated by such forms as *nibin* 'I swam' and *ghesbił* 'I am swimming.' On the other hand, *ná#* and *te-* are obligatory elements for the respective paradigm since **šibin*, **šimbin*, etc. are ungrammatical. These two prefixes also occur in the following paradigms, the stem form of which, marked by suffix *-sh*, clearly suggests that both paradigms are in the customary aspect.¹⁹

(38) -bish 'swim' (customary)

a) with *ná#*b) with *te-*

1	násbish	'I usually swim'	tesbish	'I can swim'
2	námbish		timbish	
3	nábish		tebish	
12	nábísh		tíbísh	
22	náhbish		tehbish	
33	nájebish		jetebish	

While the inceptive meaning is not immediately apparent in (b), it is not difficult to conjecture a semantic shift from a more closely inceptive interpretation such as 'I am usually ready to swim.' In other paradigms, *te-* seems to have completely lost its grammatical function and become thematized as exemplified by the following paradigms.

(39) -tʰɪ/-tal/-teʰ 'kick'

a) Imp. (seriative) b) Perf. (semelfactive) c) Perf. (seriative)		
1 testʰɪ	teʰɪtal	teghiteʰ
2 tintʰɪ	teʰɪntal	teghintaʰ
3 tetʰɪ	tiʰɪtal	teghinteʰ
12 tíʰɪ	teʰɪ́tal	teghíʰteʰ
22 tehtʰɪ	teʰehtal	tegehteʰ
33 jetetʰɪ	jetiʰɪtal	jeteghinteʰ

Before closing this section, two paradigms with *ú*-conative are presented below to indicate the thematic nature of this prefix which is parallel to that of *te*-inceptive. In the semelfactive paradigm, the tone of the conative is high-marked, where the conative sense is more apparent, but in the seriative paradigm the tone of the prefix is low and the conative sense is not so apparent. There are other seriative perfective paradigms in which *u*- occurs with no apparent conative sense.

(40) -tsi 'shoot'

a) ne-perfective (semelfactive) b) ghe-perfective (seriative)	
1 húnitsí 'I shot/aimed at it'	hughitsí 'I shot at it several times'
2 húnintsí	hughintsí
3 húnintsí	hughintsí
12 húnítsì	hughítsì
22 húnehtsì	hughehtsì
33 jiyúnintsí	jiyughintsí

2.6 Summary

The three nonzero conjugation markers that are attested for position 4 in Chilcotin include *še*-, *ghe*- and *ne*-. The

occurrence of *ŕe-* along with *ghe-* in negative paradigms provides evidence that *ghe-* progressive is an aspect/mode prefix in position 3 rather than a conjugation marker in position 4. The primary aspect/mode prefixes in position 3 include *ŕe*-optative, and *ghe*-progressive, and possibly *ne*-adjectival/perfective, the synchronic status of which is questionable as an aspect/mode prefix. There are also two secondary aspect/mode prefixes: *te*-inceptive in position 5 and *ú*-conative in position 6. *te*-inceptive forms secondary aspectual paradigms based on the progressive and *ŕe*-perfective paradigms, while *ú*-conative frequently occurs in seriative paradigms.

There is no evidence that any of the aspect/mode prefixes in position 3 freely co-occur with any of the three conjugation markers in position 4. *ŕe-* occurs in optative paradigms, but only in the negative, and there is no indication that the other two conjugation markers occur in optative paradigms. Neither is there any evidence that any of the three conjugation markers occur in the progressive paradigm, although tonal manifestation of conjugation markers in the progressive or optative is not totally ruled out.

3. Tone

The choice of the term 'tone' instead of 'pitch accent' is primarily due to the spreading and perturbing phenomena of the marked lexical tone. It is relatively easy to determine high-marked lexical tone of monosyllabic and disyllabic words in Chilcotin, but the underlying lexical tone patterns become obscured in polysyllabic words, mostly in verbs, because of spreading (assimilation) and perturbation. The actual pitch level of tone is further complicated by the lowering and raising effects of syllable initial and final

consonants as well as vowel quality of the syllable nucleus (i.e. syllable type).

3.1 Marked high tone

Considering monosyllabic and disyllabic words cited below from a comparative perspective, it is clear that Chilcotin tone is high-marked.

- (41) a) L sa 'sun,' qi 'shoe,' nu 'island,' chan 'rain,' tu 'water,' yeš 'snow.'
- b) H bén 'tent,' tsá 'beaver,' k'án 'now,' qúnw 'house,' chán 'rain.'
- (42) a) LL debi 'mountain sheep,' qitsel 'heel,' deltsuŵ '(it is) yellow,' nisʔin 'I see it,' senen 'my back,' seži 'my belt.'
- b) LH senén 'my land' (cf. senen 'my back'), selá 'my head,' seži 'my mouth' (cf. seži 'my belt'), seqí 'my foot' (cf. sesqi 'my child'), nanjéz 'fox' (cf. nánjéz 'you drag it').
- c) HL nátsed 'I wave around' (cf. testsed 'I wave'), gást'in 'I do so.'
- d) HH ts'íqí 'woman,' qáníh 'spoon,' nánqíh 'two,' ts'émán 'salmon.'

The underlying tone patterns HL and HH are particularly difficult to determine for two reasons: allotonic variation conditioned by syllable types and forward tone spread. Story (this volume) reports for Carrier that the pitch level is higher in analogous environments if the syllable onset is fortis consonant (aspirated or glottalized obstruent or voiceless fricative). She also observed that pitch is higher in analogous environments if the syllable nucleus is a high vowel, particularly *i*. Although no details of this phenomenon have

been investigated, Chilcotin tone also appears to be conditioned in the same manner as Carrier tone. Furthermore, Chilcotin tone is also conditioned by a syllable-final sonorant, particularly *n* and *l* which makes the unmarked tone lower than otherwise, and tends to render a contour effect on H. A couple of examples will illustrate these points. The pitch of the first syllable of *nánqih* 'two' is lower than the second syllable although both are high because the second syllable constitutes the optimal condition for pitch rise with tense onset and coda and the high front vowel. When *nánqih* is compared with *nanjéz*, however, it is clear that the first syllable of *nánqih* is higher than the first syllable of *nanjéz*. *bén* and *k'án* are both high-marked, but the pitch of the latter is slightly higher than that of the former, presumably because of the tense ('fortis') onset in the latter. The lowering effect of a syllable-final sonorant is better illustrated with verb paradigms to be presented shortly. Forward tone spread means that unmarked tone(s) (i.e. L) assimilates to the marked tone (H) to its left, so that the pitch level of L approaches, or is as high as, the marked tone, depending on the tautosyllabic consonant(s) and/or quality of the syllable nucleus. For this reason, it is extremely difficult to distinguish underlying HL from underlying HH. In fact, what appears as HH on the surface may be HL to which tone spread has applied. This problem is also better described in the framework of verb paradigms.

3.2 Spreading vs. reversal

One of the phonological characteristics of the 12 subject prefix in many Athapaskan languages is that it carries marked tone. What is interesting about this prefix in Chilcotin (and in Carrier as far as I know) is that in its presence the tone on the stem reverses. This phenomenon accounts for some apparently irregular stem tone. For this reason, some of the details of this process are discussed first in this section. The

two paradigms given below show reversed tone on the stem of 12 forms.

(43) a) 'swim' (perfective) b) 'sew' (imperfective)

1	nibin	nenesaqá
2	nimbin	neninqá
3	nimbin	neneqá
12	níbin	neníqà
22	nehbin	nenehqá
33	jenimbin	nejeneqá

In (a) L became H (high-reversal) and in (b) H became L (low-reversal).

The tone reversal caused apparently by the marked tone of *-íd* still takes place even if the underlying marked tone of the subject prefix is deleted, as demonstrated by the following paradigm.

(44)	1	nasbish (na# 'back')	'I usually swim back home'
	2	nambish	
	3	nabish	
	12	nabísh	
	22	nahbish	
	33	najebish	

The case of high-reversal is apparently an assimilation, while the case of low-reversal a dissimilation, so neither assimilation (spread), nor dissimilation is an appropriate description of what happens. There is another reason to believe that this phenomenon is not a case of assimilation or dissimilation. The low-reversal is frequently, but not always, realized by a contour tone (\hat{V}), as illustrated by the following:

(45)	a)	nítsên	'we are bad'	cf.	nentsén	'he is bad'
	b)	ghídzû	'we were good'	cf.	ghizú	'I was good'
	c)	hughíjîd	'we poked him'	cf.	highíjîd	'I poked him'

There are a number of apparent counterexamples to tone reversal in 12 forms. The following imperfective and perfective paradigm of the intransitive verb 'roll' present two different cases.

(46) ná#...1-bánê/-banê 'roll'

a. Imperfective

1 násbánê (- -)

2 nánlbânê

3 nálbânê

12 nálbânê *nâlbânê

22 náłbânê

33 nájêlbânê

b. Perfective

násésbanê (- - _)

nâísínłbanê

náłbanê

nâsíłbanê (nâsíłbânê)

nâséłbanê

nájêłbanê (nájêłbânê)

In the imperfective the stem tone is H, which means that low-reversal is expected for the 12 form, but this rule is apparently blocked. This is probably due to the marked lexical tone of ná# 'around,' which spreads forward. As will be discussed shortly, this forward spread affects all prefix syllables to its right except stems of a certain syllable type. This assimilated high tone is marked in the above transcriptions. In the perfective paradigm, all prefix syllables are high assimilating to ná#, and the underlying stem tone is unmarked (i.e. low), apparently not affected by forward spreading. There are, however, two forms in this perfective paradigm which do not have the expected tone on the stem. The stem of 12 is not high-reversed, while the stem of 3sg form is reversed, contrary to the rest of the stem tone in the paradigm. The possible alternate forms that are in parentheses may occur in isolation or different contexts for reasons associated with the deletion of ê- in 3 and 33 forms. This is another cause of stem tone reversal.

As discussed briefly in section 2, it is not fully understood how ê- is deleted to impart a devoicing effect on l-classifier, but let us assume that the 3sg form in the above perfective

paradigm has lost its conjugation marker via metathesis and cluster reduction. The loss of *še-* (actually the metathesis of it; see below) apparently triggers the stem tone reversal, i.e. *ná#še-l-bánž* → *ná#eš-l-bánž* → *ná#š-l-bánž* → *ná#s-ł-bánž* → *ná#-ł-bánž*. In this particular paradigm, *še-* is completely lost in 3 and 33 forms because metathesis feeds *Ÿ* deletion and cluster reduction, but as the following two paradigms illustrate, metathesis alone would be a sufficient condition for the stem tone reversal, and it is not only *še-*-conjugation marker, but also *ne-*-conjugation marker that causes tone reversal when metathesized. It should also be noted that the tone reversal does not always occur in the 33 form despite the fact that the conjugation marker is lost in (46b).

(47 a) <i>ne-...Ø-ʔiny</i> (perf) 'steal' b) <i>ú-..d-yan</i> (imp)'be shy'	
with <i>še-</i>	with <i>ne-</i>
1 <i>nežiʔiny</i>	<i>húnésjan</i>
2 <i>nežinʔiny</i>	<i>húnínjan</i>
3 <i>nižʔiny</i>	<i>húnján</i>
12 <i>nežítʔiny</i>	<i>húníjan</i>
22 <i>nežehʔiny</i>	<i>húnéhjan</i>
33 <i>jenižʔiny</i>	<i>júnján</i> (<i>je-ú-ne-d-yan</i>)

In (a) the stems of both 3 and 33 forms are high-reversed, but the conjugation marker is not completely deleted, although its phonological shape is changed by voicing, metathesis, and tensing rules, i.e. *(je-)ne-še-ʔiny* → *(je-)ne-že-ʔiny* → *(je-)ne-ež-ʔiny* → *(je-)nižʔiny*. In paradigm (b) above, which has thematized *ú-*-conative (H in semelfactive), the 3 and 33 forms undergo exactly the same processes except the loss of the metathesized vowel next to a tense vowel, and of course the introduction of *h* by epenthesis.

It might seem from the examples cited above that the tone reversal in 12 forms is suspended if the tone reversal occurs in 3 or 33 forms. But that is not the case. There are paradigms in which both types of reversal occur, and there is at least one paradigm in my data which shows that one type of reversal is marked by a reversed level tone and another type by a contour tone; there are also paradigms in which reversal in 3 and 33 forms is suspended while it occurs in 12 forms.

(48 a) 1 šit̥biz 'I boiled it' b) težits̥ 'I started shooting it'

2 išin̥biz težints̥

3 yeṭb̥iz yetizts̥

12 š̥l̥b̥iz teš̥ts̥

22 š̥et̥biz tež̥ehts̥

33 yiyet̥b̥iz j̥iyetizts̥

c) 1 húzesjád 'I have just become shy'

2 húžinjád

3 húžjád

12 húžíjád

22 húžehjád

33 júžjád

There are, of course, many other paradigms in which reversal in 12 forms is apparently blocked where it is expected. While I am unable to offer a definite solution to all of such counterexamples, it appears that forward spreading of marked tone (as mentioned briefly above) and allotonic variation conditioned by syllable types hold a key to most of such counterexamples, as demonstrated by various paradigms of the verb theme 'swim' presented below.

The two optative paradigms show that the low-reversal is realized by a level tone in one paradigm and by a contour tone in another, suggesting that these are optional variations. In

the examples given so far, only the marked lexical tone (H) and reversed tone (H or L) are marked where it is assumed that unmarked tone receives L by default or H by the marked tone spread. To illustrate this, the examples given below are marked for both H and L either underlying (lexical) or derived (assimilated or reversed).

(49) Optative

a) with ná#	b) with te-
1 náwésbí 'I will swim around'	tùsbí 'I can swim'
2 nághúmbí	tèghùmbí
3 náwébí	tùbí
12 nághúbì (level tone)	tèghúbî (contour tone)
22 náwéhbí	tùhbí
33 nájúbí	jètùbí

The prefixes in (a) all have H because the first prefix has marked lexical tone which spreads forward. Note that the prefixes in (b) are not high except the 12 form, and the subject prefix (-íd) causes reversal of the stem tone.

Now compare the two customary paradigms with the same two prefixes as the optative paradigms.

(50) Customary

a) with ná#	b) with te-
1 násbísh	tèsbísh
2 námbísh	tìmbísh
3 nábísh	tèbísh
12 nábísh	tíbísh
22 náhbísh	tèhbísh
33 nájébísh	jètèbísh

There are two questions that arise from the comparison of the two paradigms. Do the two paradigms have two different underlying stem tones? I do not think that is the case. I believe that the underlying stem tone for both is unmarked (i.e. L). It is obvious that forward tone spread has affected

the stem tone in (a). Second, why is the stem tone of the 12 form in (a) apparently not reversed? It looks as though the stem tone is not reversed because it is H as in all other forms. But in fact, it *is* reversed from unmarked L to marked H. The high tone in other stems is due to the spread of H of *ná#*. This H forward spread obscures the tone reversal effect in the 12 form.

The two progressive paradigms in (51) are morphologically identical except for the adverbial prefix, *neghá#* 'across' in (b). The stem tone is low in all forms of both paradigms except one form of each where high-reversal is expected. The high tone on the prefixes following *neghá#* is again due to forward spreading, but apparently it does not affect the stem tone. Why not? Probably because of the boundary following the marked prefix tone or the distance between the marked tone and the stem.

(51) Progressive

a) Unmodified

- 1 ghèsbìt
- 2 ghìmbìt
- 3 ghèbìt
- 12 ghífbìt
- 22 ghèhbìt
- 33 jàbìt

b) Modified by *neghá#*

- nèghághésbìt
- nèghághímbìt
- nèghághébìt
- nèghághífbìt
- nèghághébìt
- nèghájábìt

A more erratic behaviour of the forward spreading is observed in the following inceptive-progressive paradigms. In the paradigm which has no adverbial prefix, the tone pattern is as expected, but in the paradigm in which *ná#* occurs, triggering forward spreading, stem tones appear to fluctuate.

(52) Inceptive Progressive

a) Unmodified	b) Modified by ná#
1 tàsbìt 'I'm going to swim'	nátásbít 'I'm going to swim around'
2 tèghàmbìt	nátéghàmbít
3 tàbí	nátábít
12 tèghábít	nátéghábít
22 tàhbít	nátáhbít
33 jètàbí	nájétábít

The forward spreading triggered by *ná#* has reached the stem of every form in (52a), but not in the 2 form of (52b). Why not? It is frequently observed that syllables with unmarked tone (i.e. L) are lower if the coda is nasal. It appears that the high tone spread is blocked by the nasal before the stem syllable in (52b). Another unexplained tone in (52b) is the contour in the last form. It may be a combination of the spreading high tone and underlying low tone, just as it happened with low-reversal. Or it may be a combination of the spreading high tone and falling intonation at the conclusions of the citation of the paradigm. The effect of nasal coda is further illustrated by the two perfective paradigms below.

(53) a) with ná#	b) with neghá#
1 násfìn	nèghásfìn
2 násfmbìn	nèghásfmbìn
3 násébìn	nèghásébìn
12 násfbín	nèghásfbín
22 náséhbìn	nègháséhbìn
33 nájézbìn	nèghájézbìn

The high tone spread has not reached the stem in either paradigms where the stem syllable is closed by *n*. On the

other hand, the prefix syllable *šim* is affected by high tone spread, presumably because of the high front vowel as well as the tense (fortis) consonant, both of which cause pitch to rise higher. In paradigm (a), the pitch of syllable *ši* in 1 and 12 forms is the highest, while the pitch of the first syllable *ná* is slightly lower than the second syllable in every form although both syllables are high-toned. Incidentally, tone reversal occurred in 12 forms, but not in 33 forms, where it is expected. It is not expected to occur in 3 forms because *še-* is not metathesized.

The effect of tense consonants and high front vowel on stem tone is best illustrated by the two paradigms in (54), where tone reversal is not apparent.

(54) *te-...tsih* (seriative) 'shoot'

a) Imperfective	b) Perfective
1 <i>tètsih</i>	<i>tèghitsih</i>
2 <i>tìntsih</i>	<i>tèghìntsih</i>
3 <i>yètètsih</i>	<i>tèghìntsih</i>
12 <i>tìtsih</i>	<i>tèghìtsih</i>
22 <i>tèhtsih</i>	<i>tèghèhtsih</i>
33 <i>jìyètètsih</i>	<i>hìyètèghìntsih</i>

The surface stem tones in both paradigms are high, but are they high-marked underlyingly? If so, is low-reversal blocked? Contrary to what appears on the surface, I believe the stem tone is not high-marked. The unmarked tone is simply raised to the level of H because of the syllable onset as well as coda and nucleus which provide an optimum condition for pitch rise. This means that what is expected of 12 forms is high-reversal, which is what is actually observed in these two paradigms. In other words, the allotonic variation conditioned by the syllable type cancels the effect of high-reversal.

To summarize, there are three major phonological processes that obscure the surface pitch contrast: two types of tone reversal/perturbation, forward high spreading/assimilation, and allotonic variation conditioned by syllable types.

Interactions of these three processes account for most irregular pitch levels observed on the phonetic surface.

3.4 Further spreading and perturbation

There is a very limited amount of data on the behaviour of tone beyond the word boundary. However, there is ample evidence that high tone spread applies across the word boundary, although the nature of the phrase within which the rule may be constrained cannot be determined at the moment. Note, in the following examples, that the marked tone of the noun spreads onto the verb prefix which has no marked lexical tone.

- (55 a) qúnw gúntsén 'the house is bad'
 cf. gúntsén 'it (space) is bad'
 ɬìn nèntsén 'the dog is bad' ɬìn 'dog'
 dèchèn dintsén 'the stick is bad' dèchèn 'stick'
- b) ʔètsén ghíyán 'I ate meat' ʔètsén 'meat'
 cf. ghíyán 'I ate it'
 ɬù y ghíyán 'I ate fish' ɬù y 'fish'
 dǐg ghíyán 'I ate berries' dǐg 'berry'

The tone spread rule applies equally between a subject noun and verb as in (a) and between an object noun and verb as in (b).

Data on possible tone perturbation within a phrase or sentence is even scarcer, but the following two sets of sentences suggest that Chilcotin is most likely to have the perturbation phenomenon that Story reports for Carrier. Compare the sentences of each set with special attention to the stem tone.

- (56 a) *hùstát* 'I'm kicking it (prog)'
 b) *ʔín hùstát* 'I am kicking the dog'
 dog I-am-kicking-it
 c) *nín hústát* 'I am kicking you'
 d) *ts'íqí hústát* 'I am kicking the woman'
- (57 a) *ghìyán* 'I ate it (perf)'
 b) *ʔètsén ghíyán* 'I ate meat'
 c) *ʔùy ghìyán* 'I ate fish'
 d) *ts'émán ghíyàn* 'I ate salmon'

The verb stem *-tát* (prog.) 'kick' is high marked, as is shown by the verb which occurs by itself. This high-marked stem tone is reversed to low in the sentence where the subject is *ts'íqí* 'woman'. Similarly, the perfective stem of the verb 'eat' is also high-marked, which is reversed to low following *ts'émán* 'salmon' in the object position. Needless to say, it is too early to make any definitive statement about perturbation, but what is indicated by the above data is parallel to what has been observed by Story for Carrier.

4. Summary and Conclusion

The Chilcotin verb paradigms are characterized by three non-zero conjugation markers (*ne-*, *še-*, *ghe-*), three primary aspect/mode (mode) prefixes (reflexes of **ñə*-perfective, *we-* (*ghwe-*)optative, *ghe-*progressive), and two secondary aspect/mode prefixes (*te-*inceptive, *ú-*conative). There is no evidence for a symmetrical configuration of the conjugation markers and primary aspect/mode prefixes. There is ample evidence for *ghe-* as an aspect/mode prefix in position 3 rather than a conjugation marker in position 4. One of the conservative features of Chilcotin paradigms is the occurrence

of *še*-conjugation marker in negative constructions. Chilcotin also retains aspectual stem suffixes such as *-sh* (customary) and *-t* (progressive), but no details have been offered in this study.

Chilcotin tone is high-marked, but the pitch level varies according to syllable types. There are two major tone rules, both of which are progressive. One, forward spread, is an assimilation of high tone triggered by a lexically marked tone of a prefix. The other is a tone reversal/perturbation caused by the marked tone of *-íd* and by the phonological behaviour of *še*- and *ne*-conjugation markers in the affirmative paradigm. The interaction of these two dynamic forward processes and the allotonic variations accounts for most (if not all) seemingly irregular pitch levels on the surface. There is also some indication that tone perturbation occurs within the domain of certain syntactic constructions, but more work is needed to confirm this phenomenon.

Notes

* I wish to thank Maria Myers for her assistance with much of the data included in this study, but I am alone responsible for any errors in the presentation of Chilcotin material. The first draft of this paper was prepared at the Calgary Institute for the Humanities, of which I was an Annual Fellow (1985-86).

1. See Cook (1983) for some details of segmental phonology.
2. I recommend the practice of numbering prefixes counting from the root to outward rather than from left to inward towards the root (Cook 1984). It is only natural to count first those that are more closely related to the root considering the process of word formation, but the real advantage is that pan-Athapaskan order may be established

at least for the conjunct prefixes where the differences in prefix categories are primarily in the disjunct prefixes. For example, for most (if not all) languages, the classifier is in position 1, subject prefixes in 2, perfective in 3, and so forth, but these categories are differently numbered when they are counted from left to right.

3. The voicing status of the stem-initial continuant is not a concern in this study.
4. Traditionally the neuter paradigm marked by *še-* is called 'imperfective' in contradistinction to the paradigm marked by *ghe-* which is called 'perfective' largely because of the semantic difference between the two paradigms rather than the difference in forms. Semantically, these two paradigms are comparable to the 'present perfective' and 'past perfective,' respectively, of English (and other Indo-European languages). From a strictly formal point of view, however, the paradigm marked by *še-* in neuter themes is perfective as demonstrated by the occurrence of *i-* in the subject position of the 1 forms of all perfective forms (regardless of theme category) where the classifier is \emptyset or *t*. This means that all neuter themes are in the perfective marked by \emptyset , *še-* or *ghe-* conjugation marker.
5. *ye-* becomes *yi-* before *y*.
6. There is considerable variation among speakers in the application of this rule. It may apply to all sibilants in the word or only if the two sibilants are juxtaposed with or without an intervening lax vowel, and so forth.
7. Rice (1983) presented an argument for Slave that underlying stem initial continuants are voiceless. Hargus (1985) adopted this analysis for Sekani.

8. Part of the above imperfective paradigm was given earlier because of the appearance of *ne-* (2sg). The thematic prefix in this theme must have a special status in that *ne-* does not metathesize. The idiosyncratic behavior of this prefix is further apparent in the perfective paradigm in that the *ghe-* augmentation optionally applies (see the first form) and that two identical vowels remain where one of them is expected to be deleted (see also 22 form). There are no other verbs (in the available data) that show two identical vowels.
9. This is another disturbing case of terminological inconsistency. While the prefix in position 3 is called 'perfective' (although 'adjectival' is sometimes used) particularly when it co-occurs with the *ghe-* conjugation marker, the neuter paradigms in which *ne-* occurs without a marked conjugation is called 'imperfective,' in contradistinction to the one marked by the *ghe-* conjugation marker.
10. This is one of the few verbs which does not have a stem-initial consonant. The prefix strings, particularly the subject marking, clearly indicate that *d-* represents a classifier rather than a stem-initial consonant. It is also possible to postulate that classifier *d* is deleted where the stem is *-dan*. Incidentally, *ʔe-* is an object prefix (unspecified).
11. These alternate pronunciations suggest that *še-* is optionally deleted via metathesis which feeds *Ÿ*-deletion and cluster reduction.
12. *še-* in this form appears as *š-* rather than *ž-* even after a conjunct prefix (i.e. *je+*) probably because of *d*-classifier; it is *ž-* before *Ø*-classifier (cf. *yežgwed* 'he stabbed him,'

gwežq'ez 'it is cold'), and deletes under certain conditions.

13. Every form of this paradigm has H on all syllables on phonetic surface. See section 3.
14. The marked tone on the penultimate syllables and the unmarked tone on the 12 form are not explained. See section 3.
15. *še-* is completely lost (imparting marked tone) in 3 and 33 forms due to metathesis of *še-* and cluster reduction ($ye+še-ł-ben\hat{s} \rightarrow ye+e\hat{s}-ł-ben\hat{s} \rightarrow ye+\hat{s}-ł-ben\hat{s} \rightarrow yéłben\hat{s}$).
16. Considering the inceptive prefix and the progressive stem of the paradigm, I prefer this to be a subcategory of the aspect system. This labelling also eliminates an odd tense category from the system.
17. These alternative pronunciations suggest that *ghe-* augmentation applies optionally.
18. A more logical symbol in practical orthography for the consonant of the optative prefix is *ghw* which alternates with *gh* in 2 and 12 forms.
19. The Ahtna cognate is *-x* (Kari 1979).

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Sekani *ghə*: Conjugation or mode prefix?*

Sharon Hargus

In Athabaskan linguistics, the morphology of verbs conjugated in the future tense (hereafter 'mode' for 'tense') is typically analyzed as a special case of the progressive (Sapir & Hoijer (1967), Kari (1976), Young & Morgan (1980), Rice (1983), Cook (1984)). The future and progressive are analyzed as marked by the same prefix (a reflex of Proto-Athabaskan **ɣə*), differing only in that the future also requires an additional inceptive prefix (a reflex of **ɪə*), which occurs in a position to the left of the reflex of **ɣə* (Krauss 1969).

In this paper, I will argue that the morphology of future verbs in Sekani, an Athabaskan language spoken in British Columbia, Canada, requires a different analysis.¹ I will argue that future and progressive verbs in Sekani are marked by homophonous prefixes *ghə* which belong to different prefix positions. This analysis accounts for the differences between future and progressive morphology with respect to co-occurrence restrictions on *ghə* and the conjugation prefixes.

1. Terminology

An understanding of the morphology of the 'conjugation' and 'mode' prefixes in Athabaskan linguistics is central to an understanding of Athabaskan verbal morphology. These terms refer to distinct verbal prefix positions, to be elaborated on shortly. There has been no standard terminology for these

prefix positions in Athabaskan linguistics, as noted by Kari (1979) and Rice & Hargus (this volume).

Different inventories of mode and conjugation prefixes have been reported for some of the Athabaskan languages. However, some of this reported variability is probably caused by terminological differences, rather than genuine differences between the languages. Consider the mode prefixes in Navajo (1), Ahtna (2) and Slave (3):

(1) Navajo (Kari 1976)

mode	perfective
Ø, si, ghi,	í
ni, ó	

(2) Ahtna (Kari 1979)

s-perfective/ negative	mode	perfective
z	n, gh, gho, Ø	N, Ø

In Kari's analyses of Navajo and Ahtna, the mode prefix position is filled by prefixes which mark conjugation class as well as by the optative prefix (*ó* or *gho*), whereas the perfective prefix (*í* or *N*) is assigned to its own prefix position. In Slave, a slightly different analysis of the morphology of these prefixes has been proposed by Rice (1983, 1985). Rice labels the two distinct prefix positions 'conjugation' and 'mode', rather than 'mode' and 'perfective':

(3) Slave (Rice 1983, 1985)

conjugation	mode ²
Ø, ne, we, ye	Ø, ñ, ghu

The rightmost of these two prefix positions contains not only the perfective prefix, but also the optative prefix *ghu* and the imperfective prefix Ø. Thus 'perfective' is not an appropriate label for this prefix position in Slave.

Of the preceding models, that proposed by Rice for Slave works best for Sekani (Rice and Hargus (this volume)). The

conjugation and mode prefixes in Sekani occur to the left of the subject prefixes of position 12:

- (4) conjugation mode
 /Ø, `nə, `sə, ghə Ø, gho, n, ghə/³

As I will argue in this paper, the prefix *ghə* must be assigned to the conjugation prefix position in the *gh*-perfective and progressive, but to the mode prefix position for the future.

Most of the conjugation prefixes may occur with each of the mode prefixes to form the conjugation classes of the modes, as listed in (5):

- (5) conjugation mode
- | | | |
|-----|-----|--|
| Ø | Ø | Ø-imperfective |
| `nə | Ø | <i>n</i> -imperfective |
| `sə | Ø | <i>s</i> -imperfective |
| ghə | Ø | progressive (<i>gh</i> -imperfective) |
| Ø | n | Ø-perfective |
| `nə | n | <i>n</i> -perfective |
| `sə | n | <i>s</i> -perfective |
| ghə | n | <i>gh</i> -perfective |
| Ø | ghə | Ø-future |
| `nə | ghə | <i>n</i> -future |
| `sə | ghə | <i>s</i> -future |
| Ø | gho | Ø-optative |
| `nə | gho | <i>n</i> -optative |
| `sə | gho | <i>s</i> -optative |

However, certain combinations of the mode and conjugation prefixes do not occur:

(6)	<i>ghə</i>	<i>ghə</i>	<i>*gh-future</i>
	<i>ghə</i>	<i>gho</i>	<i>*gh-optative</i>

I will return to these co-occurrence restrictions in section 4.

2. Future mode

The verb prefix positions, numbered from left to right, are as follows in Sekani:⁴

- 1 Postposition (P) #
- 2 Adverbial (adv) #
- 3 Incorporated Stem #
- 4 Distributive (dst) #
- 5 Customary (C), Reversative (rev) #
- 6 Inceptive (incp) #
- 7 Direct object (O), Areal prefix (ar) %
- 8 Subject (S) %
- 9 Thematic (thm), Aspectual (asp), derivational (der) +
- 10 Conjugation (cnj) +
- 11 Mode: Imperfective (Imp), Future (Fut), Perfective (Pf), Optative (Op) +
- 12 Subject (S) +
- 13 Classifier (clf) =

The future form of any Sekani verb contains a position 9 prefix *də* as well as *ghə* in position 11. The discontinuous nature of future marking is illustrated in the future forms (6a) and (7a). Imperfective forms for comparison are given in (6b) and (7b):

(6a) /də + nə + ghə + s + ʔih/⁵
 Fut der Fut 1sS steal
 9 9 11 12
 [dənəghəsʔih] 'I will steal [O]'

(6b) /nə + s + ʔih/
 der 1sS steal
 9 12
 [nəsʔih] 'I steal [O]'

(7a) /də + ɪ + ghə + s + l = yhòl/
 Fut asp Fut 1sS clf swell up
 9 9 11 12 13
 [dəghəsɪl] 'I will swell up'

(7b) /ɪ + s + l = yhòl/
 asp 1sS clf swell up
 9 12 13
 [əsɪl] 'I swell up'

In (7a,b), the following rule has applied (see Hargus 1985 for justification of this rule):

(8) i --> ə / ____ s, gh

In (7a), the rule of ə Deletion has applied:

(9) ə --> Ø / ____ V (mirror-image)

A typical future paradigm is given in (10):

(10) /də + ghə + d = jìt/ 'drink [O]'
 Fut Fut clf drink
 9 11 13
 1s dəghəsɪt 'I will drink [O]'

2s	dəghijjɪ́t	etc.
3s	dajjɪ́t	
1d	sədəghijjɪ́t	
2p	dəghahijjɪ́t	

In the third person singular form of this paradigm, the prefix *ghə* is predictably replaced by *a*. First, Conjugation Vowel Deletion (11) removes the final ə of the prefixes *ʼsə*, *ʼnə* and *ghə* when these prefixes are preceded by a conjunct prefix and when no prefixes intervene between *ʼsə*, *ʼnə* and *ghə* and the classifier prefixes:

$$(11) \quad \text{ə} \rightarrow \emptyset / \text{V \% } \text{'s, gh, 'n} ______ = \text{[+cnj]}$$

Next, [gh] is vocalized to [a]:

$$(12) \quad \text{Gamma Vocalization} \\ \text{gh} \rightarrow \text{a} / ______ =$$

These rules are illustrated below:

$$(13) \quad \text{Cnj Vowel Deletion} \quad \text{Gamma Vocalization} \quad \text{ə Deletion} \quad \text{[dajjɪ́t]} \\ \text{ /də+ghə+d=jjɪ́t/ } \quad \emptyset \quad \text{a} \quad \emptyset$$

In the 'standard' analysis of the Athabaskan future, the future is morphologically derived from the progressive by means of the prefixation of an inceptive morpheme *də-*. Compare the progressive paradigm of 'float' in (14) with the future paradigm given in (10):

(14) /dah#ghə+leɪ/

adv Prg float

2 10

1s daghəstɛɪ 'I am floating'

2s daghɪɪɛɪ etc.

3s daghəɪɛɪ

1d dasəghɪɪɛɪ

2p daghahɪɛɪ

Note the absence of a prefix *də* in the progressive paradigm. (Additional examples of progressive verbs can be found in Rice & Hargus (this volume).) There are two similarities between future and progressive morphology in Sekani which appear to support the traditional analysis of the future as a special case of the progressive.

1. The verb stems of future and progressive verbs have similar suffixation patterns. The suffix *-ɪ* derives both future and progressive stems from unsuffixed roots:⁶

(15)	root	Fut stem	Prog stem	Imp stem
'sg/du run'	/tɛ/	[tɛɪ]	[tɛɪ]	[tɛh]
'pack O'	/xɛ/	[xɛɪ]	[xɛɪ]	[xɛh]
'handle animate O'	/chɛ/	[chɛɪ]	[chɛɪ]	[chɛh]
'sg/du swim'	/bɛ/	[bɛɪ]	[bɛɪ]	[bɛh]
'hunt O'	/dzə/	[dzəɪ]	[dzəɪ]	[dzəh]
'sg go'	/yha/	[yhaɪ]	[yhaɪ]	[yhaɪ]
'flow'	/ɪ/	[ɪɪ]	[ɪɪ]	[ɪ]

The fact that both the future and progressive are marked by the same stem suffix *t* is predicted by an analysis in which these categories share the same morphology except for the prefix *də*.

However, it should be noted that it is not uncommon for the same suffix to mark two totally unrelated categories. For example, *t* not only marks future and progressive verb stems, but it can also mark the optative of some momentaneous and conclusive aspect verbs:

(16)		Op	Fut	Imp
	root	stem	stem	stem
'handle pl O'	/tə/	[tət]	[tət]	[təh]
'handle contained O'	/ka/	[kat]	[kat]	[kàh]
'kill sg O'	/xe/	[xet]	[xet]	[xeh]
'dig'	/ke/	[ket]	[ket]	[kèh]

Moreover, the suffix -^h marks both the perfective and optative of durative aspect verbs:

(17)		Pf	Op	Imp
	root	stem	stem	stem
'pick berries'	/be/	[bè ^h]	[bè ^h]	[be]
'pl stand around'	/yha/	[yhà ^h]	[yhà ^h]	[yha]
'smile'	/sən/	[sì ^h]	[sì ^h]	[səh]

This same suffix -^h also sometimes marks the optative of momentaneous and semelfactive aspect verbs:

(18)		Op	Imp
	root	stem	stem
'drink'	/dɔ/	[dò ^h]	[dɔ]
'kindle fire'	/k'ɔ/	[k'ò ^h]	[k'ɔh]

'sg/du go'	/ya/	[yàʔ]	[yàh]
'travel by boat'	/ke/	[kèʔ]	[kèh]

Given the homophony of other aspectual suffixes, the fact that the suffix *-t* marks both future and progressive stems would seem to be questionable evidence that the future is morphologically derived from the progressive. However, the data are consistent with an analysis in which future and progressive share nearly all the same phonological marking.

2. The rules which account for alternations between *ghə* and *a* (Conjugation Vowel Deletion, Gamma Vocalization) apply not only to the prefix *ghə* which occurs in future forms, but to the prefix *ghə* which occurs in *gh*-perfective and progressive verb forms:

gh-perfective:⁷

(19a) [ʔabàʔ] 'he, she [child, animal] ate something'

(19b) [ʔəghəsàʔ] 'I [child, animal] ate something'

(20a) [ts'aʔi] 'we saw [O]'

(20b) [ghəsʔi] 'I saw [O]'

progressive:

(21a) [mæt'ats'agoɬ] 'we are crawling inside it'

(21b) [mæt'əghəsagoɬ] 'I am crawling inside it'

Thus these rules apply to all instances of the *ghə* conjugation prefix, as well as to what I will argue in section 3 are instances of *ghə* mode in the future forms like (13).

However, Conjugation Vowel Deletion does not apply to the homophonous conjunct prefix *ghə* '3p animate subject' even when it meets the structural description of the rule:

- (22) /tliǵe ʔə% ghə% tsəgh/ 'the dogs are howling'
 dogs unsp 3pS cry
 7 8
 [tliǵe ʔəghətsəgh]

- (23) /wə% ghə% ts'it/ 'they tell a lie'
 thm 3pS lie
 7 8
 [wəwəts'it]

Thus Conjugation Vowel Deletion applies to *ghə* conjugation and *ghə* mode but not to *ghə* 3p animate subject. This fact is also consistent with an analysis in which the future, progressive, and *gh*-perfective forms are marked by the same prefix *ghə*.

However, one aspect of the traditional analysis of the future as an inceptive subcase of the progressive is clearly inappropriate for Sekani. The prefix *də* which occurs in future forms is clearly not inceptive, although internal and external evidence indicates that it was historically. The productive inceptive construction in Sekani is marked by a disjunct prefix *xwə* (prefix position 6) as well as by position 9 prefixes *nə* and *ì*:

- (24b) /xwe #nə +ì +n +tsègh/
 incp der der Pf cry
 6 9 9 11
 [xwèntsègh] 'he, she started to cry'

cf.

(24a) /*ghə*+*n* +*tsègh*/

cnj Pf cry

10 11

[*ghĩtsègh*]

'he, she cried'

Examples of *də* as an inceptive prefix have only been found with weather verbs:

(25) [*dèzts'i*]

'the wind started to blow'

=

(26) [*xwèdənĩts'i*]

Future forms in Sekani thus clearly cannot be analyzed as inceptive.

3. Future *ghə* as a mode prefix

In the preceding section we have seen the motivation for the 'traditional' analysis of the Athabaskan future, in which certain similarities between future and progressive are not regarded as coincidental, but are accounted for by analyzing the future as a special case of the progressive. In this section I will present evidence that *ghə* in future forms is a mode prefix, occurring in the same position as *n* perfective and *gho* optative. In section 4 I will argue that the *ghə* prefix which occurs in progressive forms is a conjugation prefix, thus refuting the traditional analysis.

The argument for analyzing the *ghə* which occurs in future verbs as a mode prefix is based on the fact that conjugation classes of the future mode can be distinguished, just as for the imperfective, perfective and optative modes.

First it is necessary to illustrate the morphology of the conjugation prefixes / \wedge sə/ and / \wedge nə/.

3.1 The *s*- and *n*-conjugations

Occasionally the lexical entry of a verb specifies that the *s*-conjugation prefix must occur in all modes. Two such verbs are /tl'q# də+ɬeh/ 'put [pl O] in a circle' and /ʔə%də+l=gùge/ 'squat'. In addition, some adverbial and derivational prefixes require the occurrence of the *s*-conjugation prefix in all modes. Such prefixes are quite rare, consisting of *tà* 'uphill', *yighà* or *jghà* 'across', and *dah* 'up, hanging up,' all in adverbial prefix position 2; and *u* 'reach goal,' an aspectual prefix of position 9. The *s*-conjugation prefix is evident in the following imperfective forms:

- (27) /tà#`sə+s+ kèh/
 up cnj 1sS travel by boat
 2 10 12
 [tàsəskèh] 'I go ashore'
- (28) /yighà#`sə+s+ kèh/
 across cnj 1sS travel by boat
 2 10 12
 [yighàsəskèh] 'I go across by boat'
- (29) /dah#`sə+s+ h= tsus/
 up cnj 1sS clf handle cloth-like O
 2 10 12 13
 [dasəstsus] 'I hang up [cloth-like O]'

- (30) /mə+ ts'ɛʔ u+ `sə+s+ d= xəh/
 3sO to asp cnj 1sS clf pack
 9 10 12 13
 [məts'ɛʔ ʊsəsgəh] 'I pack [O] to him, her'

A typical *s*-imperfective paradigm is given in (31), and an *s*-perfective paradigm in (32):

- (31) /tə#na# `sə+d= dah, ʔàs/ 'sg/du go back uphill'
 up rev cnj clf sg, du go
 2 5 10 13
- | | | |
|----|--------------|----------------------------|
| 1s | tənasəsdah | 'I go back uphill' |
| 2s | tənasjdah | 'you [sg] go back uphill' |
| 3s | tənasdah | 'he, she goes back uphill' |
| 1d | tənasit'às | 'we [du] go back uphill' |
| 2p | tənasah't'às | 'you [du] go back uphill' |
- (32) /`sə+ch'q/ 'shoot dead'
 cnj shoot
 10
- | | | |
|----|---------|--------------------------|
| 1s | sich'q | 'I shot [O] dead' |
| 2s | sjdch'q | 'you [sg] shot [O] dead' |
| 3s | səch'q | 'he, she shot [O] dead' |
| 1d | sich'q | 'we [du] shot [O] dead' |
| 2p | sach'q | 'you [pl] shot [O] dead' |

In contrast with prefixes like *dah* 'up,' which require the *s*-conjugation prefix in all modes, some prefixes, such as *nə* terminative or *nà* continuative, require `sə only in the perfective mode. Compare the imperfective and perfective forms of the following *nə* terminative and *nà* continuative verbs and note

the absence of some form of `sə in the imperfective forms (33a) and (34a):

- (33a) /nà# ghwèt/ 'he, she walks fast'
 cont walk fast
 2
 [nàghwèt]
- (33b) /nà# `sə+ghwèt/ 'he, she walked fast'
 cont cnj walk fast
 2 10
 [nàsəghwèt]
- (34a) /nə+ ʔìh/ 'he, she steals [O]'
 term steal
 9
 [nəʔìh]
- (34b) /nə+ `sə+ʔì/ 'he, she stole [O]'
 term cnj steal
 9 10
 [nèzʔì]

In the perfective form in (34b), certain regular changes have occurred: the vowel of the position 9 prefix has changed to [e], the vowel of the conjugation prefix has been deleted, and the [s] of the conjugation prefix has changed to [z]. These rules, which are somewhat problematical, are not important here; see Hargus (1985) for a discussion of their formulation.

Like the *s*-conjugation, some adverbial and aspectual prefixes require the *n*-conjugation prefix in all modes. Examples (35)-(39) illustrate imperfective forms which contain the `nə conjugation prefix:

- (35) /y^hèl nè# nè+ s+ t^heh/
 trap to ground cnj 1sS handle pl O
 2 10 12
 [y^hèl nèⁿəst^heh] 'I set traps' Imp
- (36) /ts'e# `nə+ s+ sit/
 awake cnj 1sS wake
 2 10 12
 [ts'enəssit] 'I wake up'
- (37) /yidà# `nə+s+ l= t^hleh/
 inside cnj 1sS clf sg/du run
 2 10 12 13
 [yidànəst^hleh] 'I run inside'
- (38) /che# `nə+s+ ʔàh/
 water cnj 1sS handle compact O
 2 10 12
 [chenəsʔàh'] 'I place [compact O] in water'
- (39) /u+ `nə+ s+ h= ch'uxw/
 asp cnj 1sS clf shoot
 9 10 12 13
 [ùnəsch'uxw] 'I take a shot at [O]'

A typical *n*-imperfective paradigm is given in (40), and an *n*-perfective paradigm in (41):

- (40) /ghòh#`nə+yhah, ʔàs/ 'sg/du arrive at [O], walking'
 P cnj sg, du go
 1 10
 1s mòhnəs^yhah⁸ 'I walk to him, her'
 2s mòhnijah etc.

3s	yq̄hɣyah
1d	m̄q̄hsənìt'às
2p	m̄q̄hnahʔàs

(41)	/k'e #`nə+yhits/ break cnj 2 10	'break [O] in two'
1s	k'enɪyìts	'I broke [O] in two'
2s	k'enɪyìts	etc.
3s	k'enɪyìts	
1d	k'esənìdzìts ⁹	
2p	k'enayìts	

Unlike the *s*-conjugation, there are no verbs in which the *n*-conjugation prefix occurs only in the perfective, but not in the other modes.

3.2 The optative as a mode prefix in Slave

Rice's (1983), (1985) argument that the optative prefix is a mode prefix was based on the tonal representations of the Slave cognates to the Sekani *s*- and *n*-conjugation prefixes.

Rice observed that some of the conjugation prefixes in Slave contain a tonal, as well as a segmental, underlying representation.¹⁰ However, the tonal portion of these conjugation prefixes occurs only on the prefix which precedes the conjugation prefix, and never on the conjugation prefix syllable itself. Moreover, the tone does not appear when the conjugation prefix is word-initial or preceded by a disjunct prefix. Thus the tones of the conjugation prefixes are preserved only when these are preceded by a conjunct prefix.

Rice further observed that certain optative forms in Slave are aberrant with respect to two phenomena: the presence of

tones, and the non-application of a regular rule (given in (42)) which coalesces the optative prefix with a preceding prefix.

$$(42) \quad \text{CV} + (\text{gh})\text{u} \rightarrow \underset{\text{Op}}{\text{Cu}}$$

The tones in the optative forms appear when a prefix which requires the *s*- or *n*-conjugation prefix in other modes is present (e.g., prefixes such as those cognate with Sekani *dah* 'up' (*s*-conjugation) or *che* 'water' (*n*-conjugation)). Rice showed that the tones can be accounted for in an analysis in which one of the tonal conjugation prefixes is present in the underlying representation. The fact that conjugation classes of the optative in Slave were distinguishable indicated that the optative prefix should be assigned to the mode, rather than conjugation, prefix position.

3.3 The future as a mode prefix in Sekani

The tones of the cognate Sekani conjugation prefixes can be seen in (30), (34), and (46) above, but the tones are clearly absent in (29), (31), (32), (36), (38), (40), and (41), in which the conjugation prefix is word-initial or immediately preceded by a disjunct prefix. For further illustration of the tonal properties of these conjugation prefixes, see Rice and Hargus (this volume).

gho optative and *ghə* future in Sekani must be regarded as mode prefixes for reasons identical to those provided by Rice for regarding the Slave optative prefix *ghu* as a mode prefix.

Since Sekani *s*- and *n*-optatives differ only superficially from the corresponding Slave forms, arguments for analyzing the Sekani optative prefix *gho* as a mode prefix are exactly parallel to those proposed by Rice for Slave. In Sekani, the segmental portions of the conjugation prefixes are deleted in future and optative paradigms; however, the tonal portions of these morphemes are preserved in optative and future forms

when preceded by prefixes of positions 7-9. Recall that this is the same set of prefixes which preserve the tones of the conjugation prefixes in imperfective and perfective forms. (See Rice and Hargus (this volume) for exemplification of the *s*- and *n*-optative in Sekani.) The fact that the optative prefix can occur with the *s*- and *n*-conjugation prefixes indicates that the optative prefix is also a mode prefix in Sekani.

The tonal properties of certain future forms provide a parallel argument for analyzing the prefix *ghə* which occurs in future forms as a mode prefix.

Sekani and Slave differ in their marking of the morphological category future. In Sekani, the productive future is formed by the prefixation of *də* and *ghə*, as discussed in section 4 above. However, in Slave, the future construction which is morphologically cognate with the Sekani one is an inceptive progressive future construction, limited to momentaneous aspect verbs. The productive future in Slave is not formed by prefixation, but (in some dialects) by the addition of a post-verbal particle, such as *góʔo*, *gha*, etc., to an imperfective verb form; in other dialects, what was historically the optative has been generalized to a future category. (See Rice 1983 for details.)

The distinctive characteristics of *s*- and *n*-future forms are similar to those of *s*- and *n*-optative forms. Tones appear on the syllable preceding the prefix *ghə* 'future'. This suggests that conjugation classes of the future should be distinguished, and thus that the prefix *gh* which appears in future forms is to be analyzed as a mode prefix. Consider the following paradigms:

(43) 'put pl O in a circle' Fut

1s	tse tɬ'ɔdədəghəsɬeɬ	'I will put rocks in a circle'
2s	tse tɬ'ɔdədəghɪɬ	etc.
3s	tse tɬ'ɔdədələɬ	

- 1d tse tl'òdədəghìyeɬ
2p tse tl'òdədəghahɬeɬ

(44) 'wake up O' Fut

- | | | |
|----|-----------------|-----------------------------|
| 1s | ts'enədəghəssəɬ | 'I will wake you [sg] up' |
| 2s | ts'esədəghìhsəɬ | 'you [sg] will wake me up' |
| 3s | ts'esədàhsəɬ | 'he, she will wake me up' |
| 1d | ts'eghudəghìzəɬ | 'we [du] will wake them up' |
| 2p | ts'esədəghahsəɬ | 'you [pl] will wake me up' |

Low tone appears on the syllable preceding *ghə* in all but the 1d forms. Comparison of these future paradigms with imperfective and perfective paradigms indicates that the segmental portions of the conjugation prefixes are present in these other modes:

(45) 'put pl O in a circle' Imp

- | | | |
|----|-----------------|---------------------------|
| 1s | tse tl'òdèesteh | 'I put rocks in a circle' |
| 2s | tse tl'òdèɛleh | etc. |
| 3s | tse tl'òdèsteh | |
| 1d | tse tl'òsədiyeh | |
| 2p | tse tl'òdàahɬeh | |

(46) 'wake up O' Pf

- | | | |
|----|----------------|------------------------|
| 1s | ts'enənihsət | 'I woke you [sg] up' |
| 2s | ts'esənìhsət | 'you [sg] woke me up' |
| 3s | ts'esənìhsət | 'he, she woke me up' |
| 1d | ts'eghusənìzət | 'we [du] woke them up' |
| 2p | ts'esənahsət | 'you [pl] woke me up' |

These data suggest that the future paradigms in (43) and (44) contain the tonal allomorphs of the conjugation prefixes `sə and `nə underlyingly.

The presence of the segmental portions of the *s*- and *n*-conjugation prefixes in the related imperfective and perfective paradigms is important evidence against a possible alternative analysis of the tones in *s*- and *n*-future forms. Another low tone prefix, *ì* aspect, occurs in prefix position 9 between *də* future and *ghə* future. This prefix might seem a plausible source for the tones in the future forms, because the prefix strings of future verb paradigms containing *ì* aspect are identical to those which contain the *s*- or *n*-conjugation prefixes. An *ì* aspect future paradigm is given in (47) for comparison with those in (43) and (44):

- (47) /na# də+ də+ ì+ ghə+h= k'qɬ/ 'kindle fire'
 rev der Fut asp Fut clf kindle
 5 9 9 9 11 13
- | | | |
|----|---------------------|------------------------|
| 1s | kwèn nadədəghəsk'qɬ | 'I will kindle a fire' |
| 2s | kwèn nadədəghìhk'qɬ | etc. |
| 3s | kwèn nadədàhk'qɬ | |
| 1d | kwèn nadədəghìk'qɬ | |
| 2p | kwèn nadədəghahk'qɬ | |

Various phonological rules either delete *ì* (as in the 3s form) or change *ì* to [ə] (in the 1s, 2s, and 2p forms), thus obscuring the fact that *ì* is present underlyingly in this paradigm. However, *ì* is present on the surface in imperfective and perfective paradigms, as the following imperfective paradigm of 'kindle fire' indicates:

- (48) /na# də+ ì+ h= k'qh/
 rev der asp clf kindle
 5 9 9 13

1s	kwèn nadàsk'òh	'I kindle a fire'
2s	kwèn nadìhk'òh	etc.
3s	kwèn nadìhk'òh	
1d	kwèn nasədìk'òh	
2p	kwèn nadàhk'òh	

ì appears in the 3s form, and low tones appear on the prefix which precedes the subject prefixes in all but the 1d form. However, in the imperfective and perfective paradigms of *s*- and *n*-future verbs, the segmental portions of the *s*- and *n*-conjugation prefixes are present, as seen in (45) and (46). Thus *ì* aspect is not a possible source for the low tones in *s*- and *n*-future forms.

The various phonetic forms of the conjugation prefixes are summarized in (49):

(49) *`sə*, *`nə* conjugation prefixes-surface forms (see also Hargus & Rice (this volume)

	preceded by: prefixes 1-6	prefixes 7-9
Imp, Pf	<i>sə</i>	<i>`sə</i>
	<i>nə</i>	<i>`nə</i>
Fut, Op	Ø	<i>`</i>
	Ø	<i>`</i>

The co-occurrence of *ghə* future and the tonal allomorphs of the *`sə* and *`nə* conjugation prefixes suggests that the future mode has conjugation classes just as the imperfective, future, and perfective do, and thus that the prefix *ghə* which occurs in the future mode must be assigned to prefix position 12, mode.

4. Progressive *ghə* as a conjugation prefix

In the preceding section I presented evidence that the prefix *ghə* which occurs in future forms is a mode prefix. It is also clear from *gh*-perfective forms (Rice and Hargus (this volume)) that *ghə* is both a conjugation and a mode prefix in Sekani. Note the co-occurrence of *ghə* and *n* perfective in the *gh*-perfective form in (50):

- (50) /*ghə*+*n*+ *tsègh*/ 'he, she cried'
 cnj Pf cry
 10 11
 [*ghĩtsègh*]

It remains to be seen, however, whether or not the prefix *ghə* which occurs in the progressive is a conjugation or a mode prefix. Given the similarities between future and progressive morphology discussed in section 2, one might suspect that *ghə* in the progressive forms is also a mode prefix, as predicted by the 'standard' analysis of the future. Moreover, restrictions on the distribution of progressive *ghə* would also support this analysis. Recall that *ghə* only occurs in the imperfective of those verbs which allow a progressive derivation: there is no progressive optative or progressive perfective. Assigning *ghə* progressive to the mode position would predict that *ghə* and the other mode prefixes do not co-occur.

However, there are some important differences between future and progressive morphology. First, the future and progressive differ in productivity. Only motion theme verbs have a progressive derivation, whereas verbs of any theme category can be conjugated in the future. (See Rice (1983) or Kari (1979) for further information about verb theme categories in the Athabaskan languages.)

Second, unlike the future, conjugation classes of the progressive cannot be distinguished. Progressive forms containing adverbial or aspectual prefixes which require the *`sə* or *`nə* conjugation prefix indicate that *ghə* in progressive forms must be analyzed as a conjugation prefix. In these progressive forms, low tone does not occur on the prefix preceding *ghə*. Compare the following future and progressive paradigms. (51) and (52) are the future and progressive paradigms of 'carry animate O uphill'. A position 7 direct object prefix occurs in each member of the paradigm:

(51) /tə#də+`+ ghə+h= cheʔ/

up Fut cnj Fut clf handle animate O

2 9 10 11 13

1s	tənədəghəscheʔ	'I will carry you [sg] uphill'
2s	təsədəghijcheʔ	'you [sg] will carry me uphill'
3s	təsədəhcheʔ	'he, she will carry me uphill'
1d	təghudəghicheʔ	'we [du] will carry them uphill'
2p	təsədəghahcheʔ	'you [pl] will carry me uphill'

(52) /tə#ghə+h= cheʔ/

up Prg clf handle animate O

2 10 13

1s	tənəghəscheʔ	'I am carrying you uphill'
2s	təsəghijcheʔ	'you [sg] are carrying me uphill'
3s	təsahcheʔ	'he, she is carrying me uphill'
1d	təghuwicheʔ	'we [du] are carrying them uphill'
2p	təsəghahcheʔ	'you [pl] are carrying me uphill'

In the *s*-future paradigm in (51), low tone appears on the syllable which precedes *ghə*. However, in the progressive paradigm, no low tone appears. These differences can be

easily accounted for as follows: suppose that *ghə* occurs in the conjugation prefix position in the progressive paradigm. Suppose further that the conjugation prefix position, like nearly all of the other verbal prefix positions, can be filled by only one prefix. Then the occurrence of *ghə* conjugation in the progressive (imperfective) form in (52) is what precludes the simultaneous appearance of the conjugation prefix *ʔsə*, which *tə* 'uphill' normally requires.

Identical differences between the *n*-future and corresponding progressive paradigms can also be found. An *n*-future paradigm is given in (53), and a progressive paradigm in (54). The adverbial prefix *che* 'into water' usually requires an allomorph of the *n*-conjugation prefix:

- (53) /che# chu# də+ də+ ʔ+ ghə+l= tleʔ/
 water water der Fut cnj Fut clf sg., du. run
 2 3 9 9 10 11 13

1s	chechudədəghəstleʔ	'I will run into the water'
2s	chechudədəghjtleʔ	etc.
3s	chechudədətleʔ	
1d	chechus TM dədəghitleʔ	
2p	chechudədəghahtleʔ	

- (54) /che# chu# də+ ghə+l= tleʔ/
 water water der Prg clf sg., du. run
 2 3 9 10 13

1s	chechudəghəstleʔ	'I am running into the water'
2s	chechudəghjtleʔ	etc.
3s	chechudatleʔ	
1d	chechusədəghitleʔ	
2p	chechudəghahtleʔ	

In the progressive paradigm in (53), no tones appear on the prefix preceding *ghə*, whereas tones are present in the future paradigm given in (54), as expected.

5. Conclusion

I suggest that these restrictions on the co-occurrence of progressive *ghə* and an allomorph of the *s*- and *n*-conjugation prefixes are best accounted for by assigning the prefixes *ghə* 'future' and *ghə* mode to different morphological categories, and thus, to different prefix positions.

Thus I conclude that the standard Athabaskan analysis of the future is not an appropriate analysis of the Sekani future. The Sekani future is not an inceptive subcase of the progressive.¹¹

Notes

- * This paper was originally presented at the 1984 meeting of the American Anthropological Association in Denver, Colorado. I thank Bruce Hayes, Pam Munro, and Gill Story for their comments on an earlier version of this paper. In addition, both of the editors of this volume have made numerous invaluable suggestions. Of course, none of the aforementioned necessarily agrees with any or all of my conclusions.
- 1. My research on Sekani was supported in part by grants from the B.C. Provincial Museum, Victoria; the National Museum of Man, Ottawa; and the Wenner-Gren Institute for Anthropological Research. All data are taken from fieldnotes personally collected in McLeod Lake, B.C., 1982-1984.

2. Thus 'mode', while adequate as a prefix position label, tends not to be an accurate description of the semantics of the prefixes of this position. See Cook (1984) for discussion.
3. Throughout this paper, I use a modified version of the Sekani practical orthography:

j = [dž]

ch = [tš], ch' = [tš']

yh = [ç]

gh = [ɣ]

V = high tone vowel (Only low tone ` is marked.)

y = nasal vowel

4. Following Rice (1976), I have adopted four boundaries of different strengths within the verb prefixes. However, see Hargus (1987) for evidence that a fifth boundary may be required.

In addition to the abbreviations of the verb prefixes listed in the text, I use the following abbreviations in the remainder of this paper:

ar	area
cont	continuative
d/du	dual
Fut	future mode
Imp	imperfective mode
O	object
Op	optative
Pf	perfective mode
p/pl	plural
Prg	progressive
Psr	possessor

s/sg	singular
term	terminative
unsp	unspecified object

5. For most morphologically complex forms in this paper I have provided an intermediate, rather than truly underlying, representation of the morphemes involved, to avoid unnecessary discussion of phonological rules.
6. This suffix is deleted after all but vowel-final and *t*-final roots.
7. See Rice & Hargus (this volume) for discussion and exemplification of the Sekani *gh*-perfective.
8. The initial consonant of a *gh*-initial postposition is deleted intervocalically (i.e., when the postposition is prefixed with a vowel-final prefix). In the paradigm in (40), the object prefixes are *mə*- and *yə*-, the vowel of which is deleted by ə Deletion following the deletion of *gh*.
9. Note the occurrence of the position 8 1d subject prefix *sə*- in the preceding paradigms. This prefix is never present in certain paradigms (optative, *s*-conjugation), optional in others (*n*-conjugation imperfectives and perfectives, progressive, future), and obligatory in still others (Ø-conjugation imperfectives and perfectives). It seems to be historically related to the *s*-conjugation prefix and has been reported in other languages (Story 1980, Cook 1984). See Hargus (1985) for information about the position of the Sekani 1d prefix *sə*.
10. The association of tones with the conjugation prefixes is poorly described for the tonal Athabaskan languages, although it has been widely enough documented that Leer (1979) has reconstructed the (Pre) Proto-Athabaskan

form *ʔsi (*ʔsə) for the *s*-conjugation prefix. Note that tone in the modern Athabaskan languages is historically derived from syllable-final glottal stop (Krauss 1964).

11. However, the similarities between *ghə* conjugation and *ghə* mode mentioned in section 2 indicate that the standard Athabaskan analysis of the future is historically correct, and that the separation of *ghə* into conjugation and mode prefix positions must be a Sekani innovation. This separation or movement of a conjugation/mode prefix to another prefix position is not without precedent (Krauss 1969).

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The Phonology of Fort Nelson Slave Stem Tone: Syntactic Implications

Keren D. Rice

While all Slave dialects illustrate expected high marked tone reflexes of Proto-Athapaskan constricted vowels (Krauss 1978), in some dialects tonal processes serve to obscure the underlying tone melodies. In this paper, I will examine some processes that affect tone in the Fort Nelson, British Columbia dialect of Slave. In this dialect, high tones of stems spread to the left within a word, associating phonetically both with the syllable to the left of that with which they are associated lexically and with the lexical host. In addition, in certain syntactically defined environments, a rule of the phrasal phonology inserts a word final low tone. This rule of low tone insertion has consequences for analyses of the syntactic structure of Slave, suggesting first that noun phrases are arguments rather than adjuncts and second that there is a verb phrase constituent.

Because a clear understanding of the tonal phonology is prerequisite to understanding the implications of the phonology for the syntactic structure, the tonal phonology of Fort Nelson Slave is examined in some detail in the first several sections of this paper. In section 1, examples of tones in Fort Nelson Slave are given. Section 2 is a brief presentation of the model of word formation employed and of assumptions made in the remainder of the paper. In sections 3 and 4, the tone rules are presented. In section 5, the syntactic consequences of these tonal processes are discussed.

1. Some examples of Fort Nelson Slave tone

In Fort Nelson Slave, two tone processes not in evidence in neighboring Slave dialects are found. First, a high tone that is lexically associated with a stem spreads one syllable to the left. Second, in phrase final position a low tone is inserted, creating a mid or low tone. The effect of these processes can be seen in the data in (1) where Fort Nelson Slave forms are compared with forms from Fort Liard Slave, where no processes affecting stem tones occur. Fort Nelson forms are shown in both phrase final and non-phrase final position.¹

(1) Fort Nelson Slave		Fort Liard Slave	
phrase final	non-phrase final	all positions	gloss
sétthi	sétthí	setthí	'my head'
síla	sílá	sílá	'my hand'
nécha	néchá	nechá	'it is big'
líbo	libó	libó	'cup'
setth'éne	setth'éné	setth'ené	'my bone, leg'
sedzié	sedzié	sedzié	'my ear'
sédhadi	sédhadi	sedhádi	'my tongue'
ʔéhtale	ʔéhtale	ʔehtále	'ptarmigan'
dét'ozi	dét'ozi	det'ózi	'it is smooth, slippery'
ségóne	ségóné	segóné	'my arm'
sétédhe	sétédhé	setédhé	'my cane'

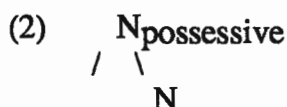
2. Assumptions

The assumptions made in this paper about the form of lexical representations, word formation, and domains of rule application are summarized in this section.

2.1 Word formation

Several different processes are involved in forming words in Slave. Lexical entries consist of themes, the most basic, nonderived lexical unit. Words are derived from themes in a variety of ways. Many themes are unmarked for category and are made into nouns and verbs by adding suffixes, generally known as stem formatives (see Rice forthcoming). The suffixes evident in this paper are the noun stem formatives \emptyset , *-e*, and *-i* and various verbal mode/aspect suffixes. The term 'stem' as used in this paper refers to a theme with one of these suffixes or with the possessive suffix, discussed below. A word can consist of a stem alone or of a form derived by one of the word formation processes discussed in this section.

Possessive formation in Slave involves two processes. One creates a branching construction, as in (2).



A prefix or noun specifying the possessor is ultimately inserted on the left branch of this structure. The second process involved in possessive formation is suffixation. Many nouns require one of the suffixes *-é* or *´* (high tone) when the noun occurs in the branching construction shown in (2). The possessive construction functions, for the purposes of phonology, as a single word whether the possessor is a noun or pronoun.

Postpositions, like possessed nouns, occur only in a branching construction, as illustrated in (3).



The left branch of this structure is filled by either a noun or pronoun, the object of the postposition. Like the possessed

noun and its possessor, the postposition and its object, nominal or pronominal, pattern as a single phonological word.

A verb stem must be preceded by at least one syllable. The verb stem obligatorily occurs in a branching construction, as in (4).

- (4) V
 / \
 verb stem

The left branch of this structure is filled by a syllabic prefix, by a number of prefixes, or by epenthetic material. The verb stem and all preceding bound material pattern as a single word.

There are two types of compounding in Slave. See Rice (1985, 1986) for discussion. One type of compound has the structure in (5a) and the second type the structure in (5b).

- (5) a. N
 /\
 N N
 b. N
 /\
 NP NP

The compounds in (5a) I refer to as lexical compounds and those in (5b) as phrasal compounds. Various rules of the phonology, including the rule of tone spread discussed in this paper, suggest these two different structures for compounds.

There are some other suffixes that can be added to Slave words to form words. These include *-ah* diminutive, *-cho* augmentative, and *-i* nominalizer.

See Rice (1986, forthcoming) for more detailed discussion of word formation processes in Slave.

2.2 Domains of rule application

Rules may have different levels of structure as their domain. One of the rules discussed in this paper has the word as its domain, while the second of the rules takes the phrase as its domain.

2.3 Lexical representation of tone

I make a number of theoretical assumptions with regard to tone. I assume that tone is autosegmental, on its own tier of representation. Moreover, at the stem level of representation, only high tone is marked in the lexicon. A vowel thus has either a lexical high tone associated with it or is lexically toneless. This assumption is based on the fact that low tones do not participate in any tonal processes at the stem level. Lexical high tones are, I assume, prelinked to a vowel rather than being linked by rule.

3. Tone Spread

In this section, I will consider the formation of non-phrase final forms only, as given in the second column in (1). The process that gives the phrase final tones is discussed in section 5. Words discussed in this section do not represent citation forms, but rather words within a phrase. (See section 4 for a discussion of what is meant by 'phrase'.)

As seen in the examples in (1), high tones on stems spread to the left, associating phonetically not just with the vowel they are associated with lexically, but also one syllable to the left of this vowel. In general then, high tones of stems are associated with two syllables and thus have two syllables as their domain. In this section, several questions relevant to the formalization of the tone spread process are explored.

3.1 The lexical placement of high tones

Because high tones have two syllables as their domain, the question arises as to whether they are lexically associated with only the first of these two syllables, only the second of the two syllables, or with both. There are several arguments that suggest that, lexically, they are part of only the second of the two syllables.

The first argument examined here suggests that the tones must be associated lexically with at least the second syllable of the domain. In Slave, there are stems that can be incorporated into the verb complex. Some examples of incorporated stems are given in the (a) forms in (6) through (8). In the (a) forms, an incorporated stem with a high tone is shown. The (b) forms show the same stem in a non-incorporated form.

- | | | |
|-------|-----------------------------------|--------------------------------------|
| (6 a) | <u>tháts</u> 'eh [?] oni | 'snuff' (one places it in the mouth) |
| b) | séd <u>há</u> h | 'my mouth' |
| (7 a) | k'e <u>tt</u> híechu | 's/he turns his/her head' |
| b) | sé <u>tt</u> hí | 'my head' |
| (8 a) | k'e <u>té</u> hetj | 's/he carries a cane' |
| b) | sé <u>té</u> dhé | 'my cane' |

Assuming that each lexical item has only one entry in the lexicon, the presence of high tones on the incorporated stems suggest that these morphemes must have high tone associated with them lexically. The lexical entries for the stems in (6) through (8) are shown in (9).

- | | | | |
|-----|-----|------|------|
| (9) | tha | tthi | tedh |
| | | | |
| | H | H | H |

This argument thus suggests that the high tones must be lexically part of the second syllable of their domain, the stem.

Not only are these high tones associated lexically with the second syllable of their domain, they are associated with just this syllable lexically. This can be seen by examining prefix tones. Prefixes can bear either high or low tone phonetically, as shown in the examples in (10) involving nouns with the first person singular possessive prefix *se-* and in those in (11) involving verbs with the conjugation marker *the-*.

- | | | |
|------|-----------|------------------------------------|
| (10) | setth'éné | 'my leg, bone' |
| | segéze | 'my cooking stick' |
| | sétédhé | 'my cane' |
| | séjizé | 'my hook' |
| (11) | théʔo | 'it (round object) is located' |
| | théhdzo | 's/he traps object' |
| | théhchú | 'it (clothlike object) is located' |
| | théhjí | 's/he hooks object' |

If the phonetic high tone on the prefixes *se-* 'first person singular' and *the-* 'conjugation' in the examples in (10) and (11) is lexically associated with that prefix, then two lexical entries, one with high tone and one toneless, will be required for prefixes, since phonetically these prefixes can carry either a high or a low tone. If the high tone is not lexically associated with the prefix but is placed there by a rule, this conclusion can be avoided. The prefixes shown in (10) and (11) can have the underlying forms *se-* and *the-*, with toneless vowels. The high tone forms arise from the application of a rule. This argument suggests that the tones are associated lexically with only the second syllable of a two syllable domain.

This analysis also provides an account of why any syllable that immediately precedes a particular stem must carry the same tone as that associated lexically with the first vowel of that stem. This is illustrated in the data in (12), where the vowels preceding the morpheme *-dhéh* 'skin, wrapping' have high tone phonetically.

- | | | |
|------|------------|--------------------|
| (12) | gáhdhéh | 'rabbit skin' |
| | denédhéh | 'person's skin' |
| | sáhdhéh | 'bear skin' |
| | tth'íhdhéh | 'mosquito netting' |
| | sédhéh | 'my skin' |

When these same lexical items occur before different stems, they can have a phonetic low tone, as in (13) through (15). In (13), the second stem is the possessed form of 'eye,' *-na* 'eye' plus *-é* possessive. *-na* is thus lexically toneless, receiving its phonetic high tone from the following vowel. In (14), the second stem is the postposition *-k'eh* 'on' and in (15) it is *ɬɔ* 'many, lots.'

- | | | |
|------|-----------|----------------------|
| (13) | gahnáá | 'rabbit's eye' |
| | denenáá | 'person's eye' |
| | sahnáá | 'bear's eye' |
| | senáá | 'my eye' |
| (14) | gah k'eh | 'on the rabbit' |
| | dene k'eh | 'on the person' |
| | sah k'eh | 'on the bear' |
| | sek'eh | 'on me' |
| (15) | gah ɬɔ | 'lots of rabbits' |
| | dene ɬɔ | 'lots of people' |
| | sah ɬɔ | 'lots of bears' |
| | tth'ih ɬɔ | 'lots of mosquitoes' |

If the phonetic high tone that appears on the syllable preceding the stem in the examples in (12) is not lexically part of that syllable, then the patterning found in these data is easily accounted for.

One can conclude then that high tones of stems with two syllable domains are associated lexically with only the

rightmost of these two syllables. A rule is required to spread the high tone to the left, onto the preceding syllable.

3.2 The status of low tones on stems

All the examples presented so far have involved the spreading of a high tone from a stem to the syllable to its left. No mention has been made of low tones. Low tones do not, in fact, spread in the same way as high tones do.

In the examples in (16), forms with phonetically low tone stems preceded by a high tone prefix are given.

- | | | |
|------|------|--------------------------|
| (16) | ídɔ | 'we drink' |
| | káhɛ | 'I take out pl. objects' |

If these stems have underlying low tone and if low tones spread, the prefixes in these forms should be phonetically low since low tone would, like high tone, have two syllables as its domain.

Evidence from compounds of the form [N N]_N further confirms the conclusion that low tones do not spread. In these compounds, if the second member has a lexical high tone on the first syllable, the final syllable of the preceding item always has a high tone. This is shown in the examples in (12). This is not the case in compounds where the first syllable of the second member has a phonetic low tone. In these compounds, the preceding syllable can carry either high or low tone phonetically, as illustrated in the forms in (17), where in (a) and (b) the first member of the compound ends in a low tone and in (c) and (d) it ends in a high tone.

- | | | |
|--------|---------|-------------|
| (17 a) | sahk'a | 'bear fat' |
| | sah | 'bear' |
| b) | golɔk'a | 'moose fat' |
| | golɔ | 'moose' |

c)	tsák'a	'beaver fat'
	tsá	'beaver'
d)	ʔéts'ézék'a	'kidney fat'
	ʔéts'ézé	'kidney'

With the phonetically low tone stems, the tone of the preceding syllable is not predictable. This contrasts with high tone stems, suggesting that low tones do not spread, but rather the spreading process is limited to high tones.

This can be seen with phonetically low tone suffixes as well. Before a phonetically low tone suffix, a vowel can have either high or low tone. This is shown in the data in (18), where a low tone vowel precedes the suffix in the (a) forms and a high tone vowel precedes it in the (b) forms.

(18 a)	ʔejide	'buffalo, cow'
	jeri	'elk'
b)	jíye	'berry'
	dlóye	'squirrel'

Stem low tones do not participate in spreading, or in other tonal processes in Slave. Given this, it is reasonable to propose that low tones are unmarked; the only lexical tone is high. Low tones arise at some point later in the derivation by means of a rule that inserts a low tone on all toneless vowels. Following this reasoning, only high tones are marked in the lexical representations given.

3.3 The domain of tone spread - prefixes

The rule of tone spread spreads high tones from stems only. All high tones that are lexically associated with prefixes are both lexically and phonetically associated only with the prefix, never occurring on the syllable to the left. This can be seen in the forms in (19) through (21). The prefix high tones clearly are linked to only one syllable.

- (19 a) niedíchu 's/he picks up object'
 b) í- seriative (aspect morpheme)
- (20 a) gohdá?edíchu 'you sg. close the door'
 b) dá- 'up' (postposition)
- (21 a) k'etthíechu 's/he turns his/her head'
 b) -tthí 'head' (incorporated stem)

Only high tones on stems, never tones on prefixes (including incorporated stems), can spread.

Tone spread can apply so long as at least two syllables in the word are present and the second is part of a stem. The examples in (22) through (25) show tone spread in a prefixed noun, in a prefixed verb, in a prefixed postposition, and in a two syllable particle respectively.²

- (22) sǐlá 'my hand'
- (23) théhchú 'it (clothlike object) is located'
- (24) mét'áh 'by means of it'
- (25) égúh past

The high tone possessive suffix -é too spreads its tone. This is shown in the following examples, where a stem has phonetic low tone in isolation, but high tone when the possessive suffix is added.

- (26) deeh 'river'
 sedéézé 'my river'
- (27) ?ah 'snowshoes'
 se?áhé 'my snowshoes'

3.4 The domain of tone spread - compounds

Evidence from prefixes discussed in section 3.3 suggests that tone spread affects only those high tones that are part of a stem. Evidence from compounds allows a further delimiting of the domain of tone spread: it applies only within a word (a category of level N, V, or P containing no phrasal categories), never between words or phrases.

As discussed in section 2.1, two compounding processes are distinguished in Slave, with one type of compound consisting of two nouns and the second type of compound consisting of two noun phrases. One of a number of processes that distinguishes between the two compound types is tone spread. In compounds consisting of two nouns, tone spread occurs, as shown in (28).

- (28) sáhdhéh 'bear skin'
cf. sah 'bear'

A derivation is shown in (29).

- (29) $[[\text{sah}]_N [\text{dheh}]_N]_N \rightarrow [[\text{sah}]_N [\text{dheh}]_N]_N$

In phrasal compounds, tone spread fails to occur, as in (30).

- (30) dechijĩh 'wooden hook'
cf. dechi 'wood'

(30) has the structure shown in (31).

- (31) [dech_i]NP[jih]_{NP}
|
H

The high tone on the second element of the compound in (31) does not spread left because of the fact that the elements of this compound, while words, are also phrases. Tone spread applies only within words, not between words or phrases. The fact that it applies only within words is further confirmed by data such as that shown in (32). In this form, a modifier precedes a noun that has a lexical high tone. The tone of the noun does not spread left onto the modifier.

(32) xaade jǫh	'real hooks'
jǫh	'hook'
ʔeyi tsá	'that beaver'
tsá	'beaver'

The domain of tone spread can now be defined. The rule applies to spread a high tone from a stem one syllable to its left. The tone cannot spread outside of the word in which it originates.

3.5 The formalization of tone spread

In sections 3.3 and 3.4 it was established that tone spread affects high tones in stems within a word, spreading them one syllable to the left. The rule is formalized in (33). When a minimum of two syllables are present in a stem, this rule applies to spread the high tone of the second syllable left onto the preceding syllable. The rule of tone spread is shown in (33).



This rule alone accounts for much of the data examined so far. In the forms in (34), the stems contain one high tone on the final syllable.

In (38) some examples are shown of two syllable stems where the first syllable has a high tone and the second syllable, a suffix, is lexically toneless. The suffixes illustrated in these forms are the stem formatives *-i* and *-e*.

- | | | |
|------|---------|-------------|
| (38) | sédhadi | 'my tongue' |
| | ʔéhtale | 'grouse' |

These words have the representations shown in (39).

- | | | |
|------|---------|---------|
| (39) | sedhadi | ʔehtale |
| | | |
| | H | H |

When tone spread applies, it yields the following forms.

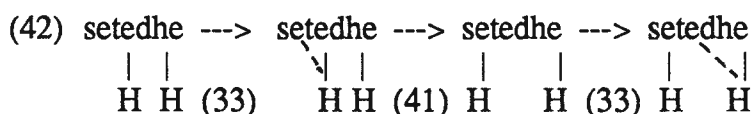
- | | | |
|------|---------|---------|
| (40) | sedhadi | ʔehtale |
| | ↘ | ↘ |
| | | |
| | H | H |

These are not the correct phonetic forms, as the data in (38) indicate. Only the prefix vowel has high tone phonetically; however, the analysis presented so far predicts that both the prefix and the stem vowels have high tone. In order to account for the actual tone patterns shown in these words, a second rule is required. It appears that a high tone associated with a non-final vowel cannot be linked to more than one vowel when the stem formative suffixes *-e* and *-i* are present. A rule is required to delink a high tone in this environment, as given in (41).

- (41) Delinking
- | | | | |
|--|---|---|---|
| | V | V | V |
| | \ | ‡ | |
| | | H | |

The rule delinks the original association line of the high tone.

Some comments on this rule are necessary. First, once this rule is introduced, a new analysis for the HH stems shown in (37) is available. In the representations in (35), a non-final high tone is linked to more than one vowel. The structural description of delinking is then met. Once delinking has applied, the structural description of tone spread is again met. The rule of tone spread thus applies cyclically, applying on successively larger domains. A derivation is given in (42).



Second, one might propose that this rule is not one of high tone delinking but rather one of low tone spread, where the stem formative vowels bear lexical low tone which spreads after the application of high tone spread. An analysis involving low tone spread is untenable, however, for reasons discussed in section 3.2. Low tones do not pattern like high tones. A rule of low tone spread, if proposed, would have restrictions on it not present on the high tone spread rule, being limited to applying in three syllable forms in which high tone spread had already applied. It could not apply in two syllable words, as the data in (18b), repeated below, show.

(18 b) jíye	'berry'
dlóye	'squirrel'

Introducing a rule of low tone spread would also complicate the grammar by introducing lexical low tones. Since low tones do not participate in tone spread, a rule of low tone spread is not a reasonable alternative to the delinking rule given in (41).

Finally, the delinking rule does not apply whenever a stem is suffixed, but only when the stem formative suffixes are involved. This can be seen by comparing the forms in (38), with stem formative suffixes, with those in (43), where the augmentative and diminutive suffixes are present.

- | | |
|------------|--------------------------------|
| (43) séghú | 'my tooth' |
| séghúcho | 'my molar' (augmentative) |
| séghúah | 'my little tooth' (diminutive) |

In these forms, the high tone associated with the vowel [u] is not delinked, as one would expect if delinking were a general rule that applied whenever a suffix were present. Instead, it is a morphologically conditioned rule, applying only in the presence of the stem formatives.

While the delinking rule is a rather unusual rule, it is necessary in order to account for the unexpected tone patterns found in the data in (38).

Turning now to some specifics of delinking, the rule only applies when a tone is linked to two vowels. In the forms in (44), a high tone is linked to a non-final vowel. However, this high tone is linked to only the first vowel of the word rather than being linked to two vowels and the tone pattern high-low is found

- | | |
|-----------|------------|
| (44) jíye | 'berry' |
| dlóye | 'squirrel' |
| kúe | 'house' |

Given the delinking rule in (41), the forms in (40) can be derived. Following the application of tone spread, shown in the representations in (40), delinking occurs, as shown in (45).

- | | | |
|--------------|------|---------|
| (45) sedhadi | ---> | sedhadi |
| \ | | |
| H | (41) | H |

The application of delinking can be seen in noun-noun compounds as well as in prefixed forms. In the compounds shown in (46), both tone spread and delinking must apply.

- (46 a) *dáhkúe* 'warehouse'
 dah-kúe --- (33) --> dahkúe --- (41) --> dahkúe
 | | |
 H H H
- b) *sáhjiye* 'bearberry'
 sah-jiye --- (33) --> sahjiye --- (41) --> sahjiye
 | | |
 H H H

With the rules of tone spread and delinking, the tonal pattern of words in non-phrase final position in Fort Nelson Slave can be accounted for. These rules cause high tones on stems to spread one syllable to the left and, under certain conditions, cause the original association line to delink. The underlying tone patterns are thus obscured by the tone spread and delinking processes. The domain of the rule of tone spread is the word, where a word consists of a head and preceding complements. A high tone spreads from a stem to a preceding syllable within the same word.

4. Low tone insertion

In the previous section, the derivation of words in non-phrase final position was considered. In this section, the derivation of words in phrase final position will be discussed. At the end of a phrase, underlying high tones appear as mid or low tone. A rule of low tone insertion operates phrase finally in Slave.

4.1 The environment for tone lowering

When a monosyllable occurs in citation form, a lexically high tone morpheme has high tone and a lexically toneless morpheme has low tone. This is illustrated in the data in (47) with nouns.

- | | | |
|---------|-------|----------|
| (47) a) | tsá | 'beaver' |
| | yá | 'louse' |
| | dzéeh | 'gum' |
| b) | tu | 'water' |
| | ya | 'sky' |
| | sa | 'sun' |

When a non-monosyllabic word occurs in citation form, a final syllable never has high tone. Words in which a final high tone is expected occur instead with a final mid or low tone phonetically. This is illustrated in the compound data in (48) through (51). In these forms, words in isolation are compared with forms where the same item occurs as the first member of a compound of either type. The vowels that are the focus of the discussion are underlined.

- | | | |
|------|-----------------|----------------|
| (48) | sétthi | 'my head' |
| | sétthígha | 'my head hair' |
| (49) | satsó <u>ne</u> | 'metal' |
| | satsónémehchíne | 'truck' |
| (50) | sédhah | 'my mouth' |
| | sédháhhdheh | 'my lips' |
| (51) | sét'óye | 'my breast' |
| | sét'óyéthi | 'my nipple' |

The same pattern arises with words containing the derivational suffixes marking diminutive (-*ah*) and augmentative (-*cho*), as in (52).

- | | | |
|------|---------------|------------|
| (52) | ségh <u>u</u> | 'my tooth' |
| | séghúcho | 'my molar' |

While the underlined vowel in (48) through (52) has a mid or low tone when it is in word final position in isolation, when it is followed by another syllable, as in a compound or

derivationally suffixed form, the underlying high tone is present.

The contrast in tone seen in (48) through (52) between nouns in isolation and compounds or derived forms containing the nouns as the first element can also be seen between verbs and nominalized verb forms with the suffix *-i*. While the verb stem does not have a phonetic high tone when it is word final, it does when it is followed by the nominalizer. Examples are given in (53) through (57).

- | | | |
|------|--|---|
| (53) | k'edéhthəh
k'edéhthédhi | 's/he flies around'
'pilot' |
| (54) | dzéeh kats'éʔah
dzéeh kats'éʔáhli | 's/he chews gum'
'chewing gum' |
| (55) | téthéhchuh
dechítée k'e téthéhchúdh | 'clothlike object is spread out'
'rug, linoleum, floor covering' |
| (56) | góts'í
ʔedéhtl'éhgóts'ídi | 's/he lies'
'newspaper' |
| (57) | dék'ǫ
ʔek'a dék'óni | 'it burns'
'candle' |

In the compounds, the augmentative and diminutive forms, and the nominalized forms, a high tone occurs on a stem when it is non-word final while a mid or low tone occurs when it is word final in isolation.

The high tone form of a stem occurs not just within words, but also within a phrase. When a high tone stem is not phrase final, it retains its high tone. This is shown in the examples in (58) through (60) where a high tone noun stem is followed by a quantifier.

- | | | |
|------|------------------|---------------------|
| (58) | mehchínę | 'toboggan' |
| | mehchínę łq | 'lots of toboggans' |
| (59) | sedéyídhe | 'my relatives' |
| | sedeyídhę ʔazhóo | 'all my relatives' |
| (60) | líbáři | 'barrel' |
| | líbáři ʔqki | 'two barrels' |

In a postpositional phrase, the nominal object of the postposition retains a final high tone. The nouns in the (a) forms of (61) and (62) have lexical high tones on the final syllable. While this high tone surfaces when the noun is the object of a postposition (b), it does not when the noun is in isolation (a).

- | | | |
|------|------------------|-----------------|
| (61) | a) ʔéla | 'boat' |
| | b) ʔéla k'eh | 'on the boat' |
| (62) | a) sékúę | 'my house' |
| | b) sékúę gots'eh | 'from my house' |

A lexically high tone verb stem has mid or low tone when it is sentence final. When followed by a tense/mode/aspect or relativizing morpheme, it maintains its high tone. This is shown in (63) through (66).

- | | | |
|------|----------------|-------------------------------|
| (63) | ʔáhja | 'I went' |
| | ʔáhja éguh | 'I went' |
| (64) | tu óhts'eh | 'I want to drink water' |
| | tu óhts'eh íle | 'I don't want to drink water' |

- (65) níóh?əh 'I want to go by boat'
 níóh?əhl éhsij 'I will probably go by boat'
- (66) néndəh 'it is long'
 dechj néndédhi 'the stick that is long'
 stick

Nouns and postpositions also retain their underlying high tone when they are not in phrase final position within a sentence. Object nouns with a final high tone retain this high tone. The nouns in (67) and (68) have lexical high tones. In (67) the high tone is part of the stem and in (68) it is the high tone of the possessive suffix.

- (67) ?edéhtl'əh 'paper'
 ?edéhtl'əh nidj'a 'you sg. pick up the paper'
- (68) sé?ee 'my jacket'
 sé?ée máohchu 'I will give him/her my jacket'

Postpositions too retain their underlying tone when in a sentence. The postpositions in (69) and (70) have lexical high tone. This tone does not surface when the postposition is phrase final but does when it is followed by a verb.

- (69) ?éla t'əh 'by means of a boat'
 ?éla t'əh ?áhja 'I went by boat'
- (70) tthee 'rock'
 tthee t'əh 'with a rock'
 tthee t'əh yejai nájtse 's/he broke the window with a rock'

The original high tone of the stem is maintained phonetically when the stem is not phrase final. When the stem is phrase final, an underlying high tone is lowered to a mid or low tone. This has been illustrated for words in isolation in the data in (1) and (55) through (70). The mid or low tone also occurs on subject nouns, as in the data in (71) and (72).

- (71) séʔee ékô théhchu 'my coat is over there'
 my.coat there clothlike object is located
 cf. séʔée ɬô 'many of my coats'
 many

- (72) selídlúe húle 'my keys are gone'
 my.key.possessive it is gone
 cf. selídlúe tay 'my three keys'
 three

The mid or low tone also occurs in another syntactic environment. In Slave there is a sentence initial topic position that can be filled by a constituent that is focussed on or contrasted with another item. See Rice (forthcoming) for discussion. When a lexically high tone item is the last word in topic position, it carries a phonetic mid or low tone also. In the example in (73a), a sentence with a postpositional phrase in topic position is shown. The postpositional phrase here has a lowered tone. In (73b), the same postpositional phrase is shown not in topic position, where it has a high tone.

- (73 a) [mét'ah]_{TOP} [t'ásji éhtɛ]_S 'in it, things are frozen'
 b) [t'ásji mét'áh éhte]_S 'things are frozen in it'

To summarize, a phonetic mid or low tone occurs instead of the lexical high tone in the following environments.³

(74) word in isolation	X]]	
phrase final verb	X]V	
end of subject phrase	X]Subject	X = phonological
end of topic position	X]Topic	material

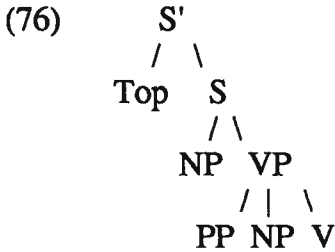
The phonetic high tone is found in the environments listed in (75). The underlining indicates that tone lowering does not occur, so a lexically high toned syllable maintains this tone at the phonetic level.

(75) word internal	
compounds	[[<u>N</u>][N]]N
nominalized verbs	[[<u>V</u>]i]N
derived forms	[[N]diminutive]
[[N]augmentative]	
phrasal	
verb + tense/mode/aspect	[[<u>V</u>]X]V
morpheme	
object noun	[X]Object
object of postposition	[[X]X]PP
postposition	[X P][Y]

Given that the rule of tone lowering applies between words but not between any two words, it must have a phrasal domain, as it is only at a domain larger than the word that the context for its application is met. In the following section I will provide a possible account of the environment in which the rule applies.

4.2 An account of tone lowering

The basic structure of a sentence is shown in the tree given in (76), assuming that Slave is a configurational language with a verb phrase node. This assumption will be examined in section 5.



Phonetic mid or low tone is found when a lexical high tone is associated with the final syllable of the constituent in topic position, subject position or verb phrase-final position; in other words, at the right edge of a daughter of S^x , where this represents S or S'. The major points of phonological juncture can be defined based on the syntactic structure of the tree.

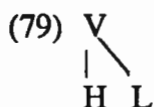
Just what happens at these major points of juncture? Pierrehumbert (1980) proposes that in English there is a boundary tone that occurs at the extremes of an intonational phrase, marking intonational phrases in the language. Slave, it seems, also has a boundary tone whose position is syntactically determined, with the tone inserted postlexically at the major syntactic breaks in a sentence. This boundary tone is low and it associates phonetically with the preceding syllable. The following rule of low tone insertion is required.^{4,5}

- (77) Boundary Tone Insertion
 $\emptyset \rightarrow L / _\]$] daughter of S^x (S, S', S'')

If the final syllable of the constituent to which this tone attaches is toneless, the inserted boundary tone simply provides the vowel with a low tone, as in (78).

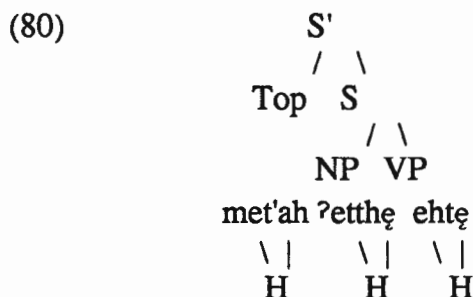
- (78) V
 |
 L

When the boundary tone attaches to a vowel that is already linked to a high tone, one of two things can happen. (79) shows the representation that arises from tone association.



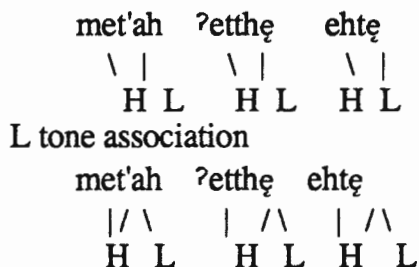
Because contour tones are not allowed in Slave, the contour must simplify. Either it becomes low, with the original high tone dissociating, or it becomes a mid tone through a combination of the features of the high and low tones.

To illustrate this rule, consider a sentence with the following structure entering the postlexical phonology. The rule of tone spread has already applied in the representations provided below.

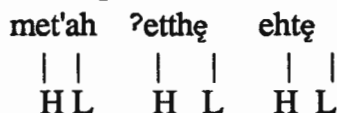


The surface form is derived as shown in (81). The example here shows a derived low tone.

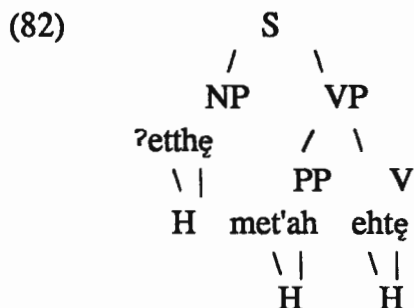
(81) L insertion



contour simplification



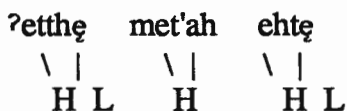
The rule of low tone insertion applies three times in this structure as the topic, the subject and the verb are all at the right edge of a daughter of S or S'. In the example shown in (82), the postpositional phrase is not in topic position. The structural description of low tone insertion in this example is met only by the subject and the verb, so the rule applies in only these positions, as shown in the derivation in (83).



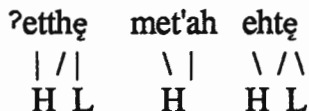
(83) [[ʔetthɛ]_{NP} [[met'ah]_{PP} [ehtɛ]_V]_{VP}]_S



L tone insertion



L tone association



contour simplification

ʔetthə met'ah ehtə
 | | \ | |
 H L H H L

In Fort Nelson Slave, major points of juncture in a sentence are marked by the lowering of high tones. This can be accounted for by introducing a boundary marker, low tone at these junctures.

5. Implications for the syntax

In recent work in syntax (Hale 1983, Bouchard 1984, Jelinek 1984), it has been claimed that one parameter by which languages differ is that of configurationality. Those languages which have been termed non-configurational tend to share a number of grammatical characteristics, including free word order, rich morphological structure, the extensive use of null anaphora, the use of syntactically discontinuous expressions, the lack of rules that move noun phrases or that refer to a verb phrase constituent. Configurational languages tend to have relatively fixed word orders and less rich morphological structures.

Some languages in the Athapaskan language family, namely Navajo and Apache, have been characterized as non-configurational because they show several characteristics of non-configurational languages. These properties include a rich morphological structure and null anaphora. See Hale 1983, Sandoval 1984, Sandoval and Jelinek (this volume), and Willie and Jelinek (this volume) for discussion. Because Slave shares non-configurational properties with Navajo and Apache, we might expect Slave, too, to be non-configurational. In this section, two hypotheses concerning the syntactic structure of non-configurational languages will be examined. It will be shown that it is difficult to account for

the tonal properties of Slave discussed in section 2 under either of these hypotheses.

The general model of grammar assumed in proposals concerning the characteristics of non-configurational languages is illustrated in the diagram in (84), the model proposed by Chomsky (1981).

- (84) lexicon
 syntax
 phonology semantics

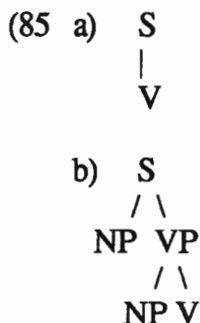
Words are formed in the lexicon and are ordered in the syntax. The output of the syntax receives phonological and semantic interpretations.

Two different proposals have been made in the literature concerning the nature of non-configurational languages. Hale (1983) and Jelinek (1984) focus on the syntactic use of noun phrases. They claim that in configurational languages, every argument position required by the lexical entry of a word must be syntactically filled by a lexical NP or by an empty NP at surface structure. For example, if a verb is transitive, it must be associated with syntactic subject and direct object NPs at surface structure, whether or not there are lexical items filling the NP positions. In non-configurational languages, on the other hand, the lexical requirements of the argument structure of a word are met internal to the word. The subject and direct object of a transitive verb will both be expressed as affixes of that verb.

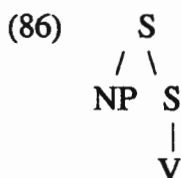
In non-configurational languages, the minimal structure of a sentence is a verb, since all arguments of the verb are internal to it. In configurational languages, where argument structure is external to the verb, the minimal structure also includes lexical NPs or empty NPs for every argument required by the verb.

Further, because the argument structure of a word is satisfied internally, overt noun phrases are not considered to be arguments of argument taking categories but rather are optional adjuncts, added to provide additional information.

Within this model then, in a non-configurational language, a transitive sentence with no overt noun phrases has the syntactic structure shown in (85a) while in a configurational language, this same sentence will have the structure shown in (85b).



In a non-configurational language, a sentence with an overt noun phrase has the syntactic structure given in (86) where the noun phrase is an adjunct to the sentence rather than an argument of the verb.



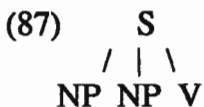
Notice that the syntactic surface structure given in (86) can represent three different lexical structures. If the verb is transitive, the NP could be either a subject or a direct object. If the verb is intransitive, the NP is its subject. The surface syntactic structure alone gives no clue as to which of these lexical structures is represented since all overt noun phrases are considered to fill the syntactic roles of adjuncts to the sentence. It is only at the level of lexical structure that all arguments are identified.

Consider now the implications of such a structure for Slave. As discussed above, the noun phrase in (86) can be either a

subject or an object. However, the phonology must distinguish these grammatical roles since a low tone is inserted only if the noun phrase is a subject. In the model shown in (84), the phonology has access to surface syntactic structure only and not to the more remote lexical structure where the grammatical relation of the noun to the verb is transparent. The phonology thus has no way of 'knowing' what grammatical role the noun fills. The existence of the low tone insertion rule must lead one to question whether it is correct to assume that all noun phrases are adjuncts and, thus, whether Slave is non-configurational according to this conception of non-configurationality.

It appears then that the Hale/Jelinek conception of non-configurationality, where all noun phrases are adjuncts to the sentence, cannot account adequately for the phrase-level phonology of Slave, given a standard model, where phonology has access only to the surface syntactic structure and not to lexical structure. Interestingly, Saxon (this volume) has found some evidence to support the claim that noun phrases are not adjuncts in Slave, but rather serve as arguments.

The treatment of noun phrases as arguments of a word is consistent with another proposal concerning the structure of non-configurational languages. Bouchard (1984) proposes that non-configurational languages differ from configurational languages not in whether argument structures are satisfied internally or externally, but in the hierarchical structure found in the two types of languages. He proposes that non-configurational languages, unlike configurational languages, have no VP. Therefore, the minimum structure for a transitive sentence in a non-configurational under Bouchard's proposal is that given in (87).



The question to be focussed on here is whether it is reasonable to posit such structures for Slave. No syntactic evidence of the type usually adduced for positing a VP has been found in Slave. The phonology, however, suggests, on the contrary, that Slave does indeed have a VP.

If there is no VP node in Slave, the environment for low tone insertion cannot be defined as a natural class, as it was in section 4. Instead, the environments will simply have to be listed: low tone insertion occurs sentence finally, following a topic, following a verb (plus any tense/mode/aspect clitics), and following a subject, where the subject is linearly defined as the first noun phrase dominated by S. In this analysis, the subject is singled out as different from other argument positions. However, the flat structure attributed by Bouchard to non-configurational languages does not predict this asymmetric treatment of the subject by the phonology.

In conclusion, the phrasal phonology of Slave strongly disfavors two possible syntactic analyses of the language. If NPs in Slave are treated as adjuncts, following the Hale and Jelinek proposal, the environment for low tone insertion is not well defined since all preverbal NPs have identical status. Second, if Slave is without a verb phrase, the environment for low tone insertion can be defined only as a list, not as a natural class. While arguing from the phonology for syntactic structure may be circular, this phonological evidence is at least suggestive that positing a flat syntactic structure with no VP and with noun phrases as adjuncts is not appropriate for Slave, but that the language must be configurational. Only if there is such structure can the environment for tone lowering be captured as a natural class. Examining the phrasal phonology of other languages that have been argued to be non-configurational might lead one to question on phonological grounds, as has recently been done on syntactic grounds (see Saxon, this volume, Speas 1986), the existence of such a distinction between languages.

6. Summary

In Fort Nelson Slave, tone processes occur that obscure underlying tone melodies. Stem high tones spread left one syllable and phrase final high tones are lowered. While altering underlying tone patterns on the surface, the fact that the tone lowering is found only in a dialect where tone spread is also found allows for the recoverability of the underlying tone patterns. The tone lowering rule provides a clue to the syntactic structure of Slave, suggesting that, despite the surface existence of several non-configurational properties, Slave must be configurational.

Notes

- * The British Columbia Provincial Museum and the Friends of the British Columbia Provincial Museum funded the research on which this paper is based. Many thanks to Ed Cook, Sharon Hargus, Peter Avery and especially to Leslie Saxon for very helpful comments on earlier versions of this paper. A version of this paper was presented at the Canadian Linguistics Association meeting in 1984.
1. The phonetic values of the following orthographic symbols should be noted: th = [θ], dh = [ð], sh = [š], zh = [ž], gh = [ɣ], ch = [č]. C' is a glottalized consonant. ee represents a mid front tense vowel [e] and e is its lax counterpart [ɛ]. The acute accent over a vowel represents high tone and a hook below a vowel is nasalization.
 2. I assume that at the time of application of tone spread, a vowel or a syllable position precedes a verb stem, giving the necessary two syllables. See section 2 for discussion. Verbs, possessed nouns, and postpositions have a

branching structure at the time that tone spread applies, thus allowing tone spread onto the previous syllable.

3. This summary, and the data supporting it, represent a citation to normal speech rate. I suspect that in faster speech, lowering will fail to occur in non-sentence final environments and in slower speech it may occur in more environments.
4. The lowered tone is far less common in monosyllables than on longer words, as shown by the data in (47). A functional explanation for this is readily available. On monosyllables the underlying tone would be unrecoverable if the lowered tone occurred. A boundary tone can occur on monosyllables in context.
5. Ed Cook has suggested an alternative analysis, where a stem vowel becomes high in tone in non-phrase final position. However, this analysis fails to account adequately for the facts of Slave tone. For example, in (i) a lexically toneless noun precedes a lexically toneless postposition and both bear low tone phonetically.

- | | | |
|----|------------|---------------|
| i. | tthee | 'rock' |
| | tthee k'eh | 'on the rock' |

The same can be seen in other structures.

- | | | |
|------|----------------|---------------------|
| ii. | compounds | |
| | tthee | 'rock' |
| | ttheetthih | 'stone axe' |
| iii. | suffix | |
| | ?ah | 'snowshoe' |
| | ?ahcho | 'hunting snowshoes' |
| iv. | nominalization | |
| | ts'edq | 'one drinks' |

ts'edoni	'what one drinks'
v. object noun	
ʔee	'coat, jacket'
ʔee máohchu	'I will give him/her a coat'

A lexically toneless vowel bears a high tone only when it is followed by a lexically high tone syllable within the word, as defined in section 2.1.

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Conjugation and Mode in Athapaskan Languages: Evidence for Two Positions*

Keren D. Rice and Sharon Hargus

In the traditional Athapaskan literature (e.g. Sapir & Hoijer 1967, Hoijer 1971), a position called 'mode' was identified in the verb prefix complex as containing several morphemes: \emptyset -imperfective, *n*-imperfective, *n*-perfective, *s*-imperfective, *s*-perfective, *y*-progressive, *y*-perfective, and optative. In this paper, we will suggest an analysis for the mode position based on recent work by Kari (1976, 1979), Rice (1985, forthcoming), and Hargus (this volume). We suggest that rather than the one position proposed by Hoijer for Navajo, the mode slot should be divided into two positions, conjugation and mode. In section 1 of this paper, terminology is clarified and an overall framework for conjugation and mode is presented. Section 2 presents a discussion of the verb complex in Slave and Sekani. In section 3, the imperfective is discussed. Section 4 deals with the perfective, section 5 with the optative, and section 6 with the future.

1. Terminology

1.1 Historical background

As mentioned above, Sapir & Hoijer (1967) and Hoijer (1971 and elsewhere) proposed a verb prefix position labelled 'mode' which could be filled by a number of different morphemes. Kari (1976) proposed that this mode position

actually represents two distinct positions in Navajo, as below.¹

- | | |
|------------------------|------------|
| (1) mode | perfective |
| Ø-, si-, ghi-, ni-, ó- | í- |

He follows this basic model in his more recent work on Ahtna (1979), in which he differentiates to an even greater extent.

- | | | |
|---------------------------|-------------------|------------|
| (2) s-perfective/negative | mode | perfective |
| z- | n-, gh-, gho-, Ø- | N-, Ø- |

In Ahtna, it is the existence of the negative that leads Kari to posit three distinct prefix positions. For languages without the negative, we suggest that two positions are required.

Rice (1985, forthcoming) maintains the notion that two prefix positions are required. She renames these positions conjugation, replacing Kari's mode, and mode, replacing Kari's perfective. The mode position can be filled by three morphemes, imperfective, perfective, and optative and, in some languages, a fourth morpheme, future.

1.2 The model

The prefixes found in conjugation and mode position in both Slave and Sekani are given in (3).

- | | |
|---------------------|--------------------------------|
| (3) conjugation | mode |
| Ø | Ø- imperfective |
| *ȝ- (henceforth gh) | *ŋ- perfective (henceforth ñ) |
| *n- | *ȝu- optative (henceforth ghv) |

The forms included in (3) above and in (4) below are those reconstructed for Proto-Athapaskan by Krauss (1969) and Krauss & Leer (1981).² They develop differently in the daughter languages under consideration here. In the Slave dialect discussed in this paper, the reflexes of the morphemes in (3) and (4) and Ø-, n-, w- (*s-), y (*gh-), ñ- and ghv-

(**ghu-*). In Sekani, they are \emptyset -, *n*-, *s*-, *gh*-, *n*-, and *gho*-. These underlying representations will simply be assumed in this paper. See Rice (1985, forthcoming) and Hargus (1985) for justification.

The conjugation prefixes occur with the different mode prefixes to form the conjugation classes given in (4). Although reconstructed forms for the conjugation and mode prefixes are used, the chart is representative of the system found in Slave.

(4) conjugation	mode	
\emptyset -	\emptyset -	\emptyset - imperfective
<i>n</i> -	\emptyset -	<i>n</i> - imperfective
<i>s</i> -	\emptyset -	<i>s</i> - imperfective
<i>gh</i> -	\emptyset -	<i>gh</i> - imperfective
\emptyset -	\tilde{n} -	\emptyset - perfective
<i>n</i> -	\tilde{n} -	<i>n</i> - perfective
<i>s</i> -	\tilde{n} -	<i>s</i> - perfective
<i>gh</i> -	\tilde{n} -	<i>gh</i> - perfective
\emptyset -	<i>ghu</i> -	\emptyset - optative
<i>n</i> -	<i>ghu</i> -	<i>n</i> - optative
<i>s</i> -	<i>ghu</i> -	<i>s</i> - optative
<i>gh</i> -	<i>ghu</i> -	<i>gh</i> - optative ³

In Sekani, a fourth prefix /*ghə*/ 'future' occurs in mode position. It can combine with the \emptyset -, *n*-, and *s*- conjugation markers. See Hargus (this volume) for discussion.

The occurrence of a particular conjugation prefix is basically predictable from morphological information, including verb theme categorization. Verb themes are the most basic lexical entries. Each verb theme consists minimally of a root and a classifier (voice element). Other prefixes that must always occur in every form of the verb are also part of the verb theme. The verb themes are divided, based on phonological,

morphological, and semantic criteria, into a number of verb theme categories. Each verb theme category is associated with a particular conjugation marker in the imperfective, perfective, and optative. For example, motion verb themes require the *n*-conjugation marker in all modes. Successive themes have the \emptyset -conjugation marker in the imperfective and optative and the *gh*-conjugation marker in the perfective. See Kari (1979) and Rice (forthcoming) for detailed discussion of verb theme categories in Ahtna and Slave respectively.

Various verb prefixes, including postpositions, adverbs, distributive, customary, and aspect, can also be conjugation determiners. When one of these prefixes is present in the verb, it determines which conjugation marker will occur in each of the modes. For example, in Slave, the position 1 adverb prefix *ní-* 'terminative' requires the *n-* conjugation marker in all modes, the adverb *dah-* 'up' requires the *w-* (**s*) conjugation marker in all modes, and the adverb *ká-* 'out' requires \emptyset - in the imperfective and optative and *y-* (**gh-*) in the perfective. The aspect prefix *de-* inceptive requires \emptyset - in the imperfective and optative and *w-* (**s-*) in the perfective.

2. An overview of the verb prefixes

The verb in Slave is organized as shown in (5).

(5) postposition#adverb#distributive#customary##
1 2 3 4
incorporated stem # number % direct object % deictic
5 6 7 8
subject % theme + aspect + conjugation +mode + subject
9 10 11 12 12
= classifier = stem
14

The Sekani verb is organized rather similarly to that of Slave, differing mainly in the inventory and positions of the disjunct prefixes. Its structure is shown in (6).

(6)	postposition #	adverbial #	stem #	distributive #
	1	2	3	4
	customary/habitual, reversative #		inceptive #	direct object
	5		6	7
	% subject % thematic, aspectual, derivational + conjugation			
	8		9	10
	+ mode + subject = classifier = verb stem			
	11	12	13	

The four boundary types, +, =, %, and # are argued for in Rice (forthcoming).

The phonological form of the conjugation and mode prefixes may vary according to which boundary precedes the conjugation marker and/or which of the four classifier prefixes (\emptyset , $h-$ ($*\text{ɬ}$), $d-$, $*l-$) is present. The $*\text{ɬ}$ classifier develops as $h-$ in both Slave and Sekani. The $*l-$ classifier has no overt phonetic form in either language (but see section 4.3.2.1). However, it is present in both languages, a morpheme consisting of just the feature [+voice]. See Rice (forthcoming) and Hargus (1985) for discussion and justification of this classifier on both phonological and morphological grounds. In addition to boundary type and classifier, the shape of the conjugation and mode prefixes may depend on which subject prefix occurs in the position immediately following that of mode. The subject prefixes of Slave (position 13) and Sekani (position 12) are listed in (7).

(7)	Slave	Sekani	
	$h-$	$s-$	first person singular (1s)
	ñe-	nə-	second person singular (2s)
	$\emptyset-$	$\emptyset-$	third person singular (3s)
	id-	id-	first person duoplural (1dp)
	ah-	ah-	second person plural (2p)

In the perfective mode of verbs which contain Ø- and *h*-classifiers, a special shape of the first person singular and second person plural prefixes is required in both of the languages, as shown in (8).

(8) perfective, Ø- and *h*- classifiers (Slave and Sekani)

i-	1s
a-	2p

In the remainder of this paper, the various phonological shapes of the conjugation and mode prefixes are illustrated. All Slave examples are taken from the Hare dialect.⁴ All Sekani examples are taken from the McLeod Lake dialect.

3. Imperfective

The formation of the imperfective is discussed first. Because the imperfective morpheme is null, one cannot use this mode to argue that conjugation and mode occupy two positions. The imperfective is presented first because its morphology and phonology is relatively straightforward.

3.1 Ø- imperfective

The conjugation marker most commonly found in the imperfective is Ø-. In the discussion below, it is illustrated following a conjunct prefix, following a disjunct prefix, and word initially. Many details of analysis are ignored here as they are not relevant to the topic at hand. Only singular forms are given as examples since the necessary conjugation/mode differences can be established on the basis of just these forms.

Sample paradigms showing the Ø- imperfective following a conjunct prefix are given in (9). In the underlying representations, the verb base, the verb word without pronominal inflection and conjugation/mode marking, is

given. The numbers represent the position of the prefix in the verb, as shown in (5) and (6).

(9) Ø- imperfective, + ____

Slave		Sekani	
ne + Ø = ʔín	'steal O'	nə + Ø = ʔinh	'steal O'
9 14		9 13	
rehʔí	1s	nəsʔih	
níʔí	2s	níʔih	
reʔí	3s	nəʔih	

Only in the second person singular does the surface form differ from the underlying representation. Here a rule deletes the vowel of the second person singular morpheme (/ñe-/ in Slave, /nə-/ in Sekani) when it follows a conjunct prefix, triggering other rules of raising and nasalization. The specifics of these rules are not relevant here and they will not be formalized.

Following a disjunct prefix, no phonological rules apply in the singular forms of the Ø- imperfective, as shown in (10).

(10) Slave		Sekani	
lé # Ø = tɪ'u	'tie together'	ɬè # Ø = tɪ'unh	'tie together'
2 14		2 13	
léhtɪ'u	1s	ɬèstɪ'uɰ	
lénetɪ'u	2s	ɬènəstɪ'uɰ	
létɪ'u	3s	ɬètɪ'uɰ	

All verbs require at least one syllabic prefix preceding the verb stem. If no such syllable is provided by a rule of word formation, then a phonological epenthesis rule inserts a peg element. This peg is *he-* in Hare, where, for reasons not relevant here, the vowel is inserted by one rule and the consonant by a second. In Sekani, the peg element is simply

ə. In the second and third person singular forms in Sekani, a rule which lowers ə- to a- before syllable final [h] has applied.

(11) Ø- imperfective, ###__

Slave		Sekani	
d=shen	'sing'	d=yhin	'sing'
14		13	
hehje	1s	əsjin	
nejje	2s	nəjin	
heje	3s	əjin	

The peg element is present in the first and third person forms, where there are no syllabic prefixes preceding the stem.

3.2 *n*- imperfective

The *n*- imperfective is marked by the prefix *n*- in position 11 in Slave and in position 10 in Sekani. This morpheme consists of a segmental portion *ne*- (Slave)/*nə*- (Sekani) and a tonal portion, high tone (Slave) or low tone (Sekani). Inclusion of the tone as part of this morpheme is justified for Slave in Rice (1985, forthcoming) and for Sekani in Hargus (this volume). The tone is marked on the preceding vowel in certain forms, as will become apparent in the discussion below.

A paradigm which illustrates the *n*- conjugation prefix in word-initial position is given in (12).

(12) *n*- imperfective, ##__

Slave	
-ghon ## Ø = da	'sg. meet'
14	
beghə rehda	1s - 3 ('I meet him/her')
beghə nɪda	2s - 3
yeghə həda	3s - 4

The first person singular form is as expected. The rules discussed above that delete the vowel of the second person singular morpheme when it follows a conjunct prefix and then raise and nasalize the preceding vowel occur in the second person singular. In the third person singular, a new rule is required. This rule, conjugation vowel deletion, deletes the vowel of the conjugation marker *n-* (and the vowel of the conjugation marker *w-* (**s-*) under identical conditions) when no segmental material intervenes between it and the classifier.⁵ Once this vowel is deleted, no syllabic prefix precedes the verb stem and the epenthesis rules discussed above must apply. A derivation of the third person form is shown in (13).

- (13) /ne = da/ 's/he goes'
 n = da conjugation vowel deletion
 en = da vowel epenthesis
 hen = da *h* epenthesis
 hɛ̃ = da nasalization
 [hɛ̃da]

Following a disjunct prefix, the form of the *n-* imperfective is essentially the same as in word-initial position.

- (14) *n*-imperfective, # __
- | | | |
|------------------|--------------|---------------------------|
| Slave | | Sekani |
| ní # na # d = da | 'sg. return' | -ghonh # Ø = yhah 'reach |
| 2 4 14 | | 1 13 O walking' |
| rírarehda | 1s | -ghɔhnəsyhah |
| ríranɪda | 2s | -ghɔhniyah |
| rínɔda | 3s | -ghɔhiyah |

In the second person form, the rules which delete the vowel of the second person singular morpheme and which raise and nasalize the preceding vowel apply. In the third person form, the rule of conjugation vowel deletion applies.⁶ In Sekani, vowel epenthesis applies, and in both languages the remaining nasal consonant of the conjugation morpheme then nasalizes

the preceding vowel. The vowel *a* raises to *o* when it is nasalized in Slave and Sekani. In the Sekani form in (14), a regular rule which raises *nasalə* to [i] has applied. A derivation for the Slave third person form in (14) is shown in (15).

- | | |
|------------------------------|----------------------------|
| (15) /ní # na # ne + d = da/ | 's/he returns' (Slave) |
| ní # na # n + d = da | conjugation vowel deletion |
| ní # nɔ # d = da | nasalization and raising |
| [rínɔda] | other rules |

In this third person form, epenthesis does not apply, since a syllabic prefix is present preceding the stem.

Following a conjunct prefix, the *n*- imperfective patterns in two different ways. It has one form when it follows *ʔe*- (Slave) / *ʔə*- (Sekani) 'unspecified object' (position 7), *ke*- (Slave) / *ghə*- (Sekani) 'human plural subject' (position 8), and *ts'e*- (Slave) / *ts'ə*- (Sekani) 'unspecified human number' (position 8) and a second form following all other conjunct prefixes.⁷ We will refer to the first set of prefixes as 'deictics'.

Following the deictics, the *n*- imperfective has the form illustrated in (16). Only examples with the conjugation marker following *ʔe*-/*ʔə*- are given.⁸

- | | | | |
|-----------------------------------|--------|------------------------|----------------|
| (16) <i>n</i> - imperfective, +__ | | | |
| Slave | | Sekani | |
| -e # fe # ʔe % h = tsi | 'push | -chon # ʔə # % Ø = tɛh | |
| 1 2 7 14 | sg. O' | 3 7 13 | 'take |
| | | | guts out of O' |
| befeʔerehsi | 1s | -choʔənəsɛh | |
| befeʔenɪhsi | 2s | -chɔʔənɪleh | |
| yefeʔjhsi | 3s | -chɔʔɪleh | |

In the third person, the vowel of the conjugation marker is deleted, as expected. The remaining nasal consonant raises the vowel, which is unexpected (as discussed below) and triggers nasalization. The first and second person forms are as described for the Ø- imperfective.

Following other conjunct prefixes, there are two major features of the *n*- conjugation marker. First, in all persons a marked tone (high tone in Slave and low tone in Sekani) appears on the prefix preceding the conjugation marker. Second, in the third person, raising fails to apply. Examples of the *n*- conjugation marker following an aspect prefix are given in (17) and following a pronoun in (18).

(17) *n*- imperfective, + ____

Slave		Sekani
ní # na # de + d = dlu	'drag in	yidà # də + Ø = ɬeh
1 4 10 14	wooden O	2 9 13 'carry
	in one trip'	pl. wooden O inside'
ríradérehdlu	1s	yidàd`ənəsɬeh
ríradénjdlu	2s	yidàdènɬleh
ríradédlu	3s	yidàdɛleh

(18) *n*- imperfective, % ____

Slave		Sekani
-ghá # na # go % Ø = ʔá	'forgive O,	ts'e#h = sit'
1 2 7 14	give O	2 13 'wake O up'
	second chance'	
begháragórehʔá	1s - 3	ts'eghùnəssit 1s - 3p
begháragónjʔá	2s - 3	ts'esənɬhsit 2s - 1s
yegháragóʔá	3s - 4	ts'esɬhsit 3s - 1s

The marked tone pronominal and theme/aspect prefixes in these examples are lexically toneless morphemes. This can be most clearly seen by the fact that they occur in other environments without a marked tone. The prefix *de*- 'wooden object' in (17) occurs in (19a) and (19b) without a marked

tone. In (19c), the areal prefix *go-* is illustrated in a form where it has no marked tone associated with it.

- (19) a) *deshj* 'stick' (Slave)
 b) *dəchin* 'stick' (Sekani)
 c) *gohsj* 'I build areal object (e.g. house)' (Slave)

In these paradigms, a rule of conjugation tone mapping maps the tone that is associated with the conjugation prefix onto the prefix preceding the conjugation prefix. This tone shows up only when the conjugation marker is preceded by a conjunct prefix. As previous examples show, the tone is deleted when the conjugation prefix is preceded by a disjunct prefix.

The forms with the *n-* conjugation marker following a conjunct prefix provide evidence for the tonal portion of the conjugation marker.

3.3 *s-* imperfective

Some verb bases occur with the *s-* (*w-* Slave/*s-* Sekani) conjugation marker in the imperfective mode. Only a few prefixes require this conjugation marker in the imperfective and no verb theme categories require it, so examples given in this section are limited.

A Slave example of the *s-* conjugation prefix following a disjunct prefix is given in (20).

- (20) *s-* imperfective, #____
 tá # Ø = ʔá 'put three dimensional object ashore'
 2 14
 táwehʔá 1s
 táwɨʔá 2s
 táhʔá 3s

In the second person singular form, vowel deletion, nasalization, and raising all occur. In the third person singular

form, the rule of conjugation vowel deletion discussed earlier deletes the vowel of the conjugation marker. The consonant *w* which remains is neutralized to [h] in Slave by a rule that makes all syllable-final consonants [h]. A derivation of the third person form is shown in (21).

- (21) /tá # we + ʔá/ 's/he puts three dimensional object
ashore'

tá # w + ʔá conjugation vowel deletion

tá # h + ʔá C --> h

[táhʔá]

The corresponding Sekani *s*- conjugation paradigm is similar.

- (22) *s*- imperfective, #___ (Sekani)
tá # na # d = dah 'go back uphill'
2 5 13

tənasəsda 1s

tənasɪda 2s

tənasda 3s

- (23) *s*- imperfective, #___ (Sekani)
dah # h = tsus 'hang up clothlike object'
2 13

dasəstsus 1s

dasɪhtsus 2s

daahtsus 3s

In the third person singular form, the vowel of the conjugation prefix has been deleted. In the third person singular form of the *h*- classifier paradigm in (23), the *s*- of the conjugation prefix becomes [h], whereas in the first person singular form, the *h*- classifier prefix is deleted after the first person singular subject prefix *s*-.⁹

When the *s*- conjugation marker follows a conjunct prefix, several patterns arise. Following the deictics, the *s*-

imperfective is formed just as it is following a disjunct prefix. This is shown in the examples given in (24).

(24) *s*-imperfective, +__

Slave			Sekani		
dah # ʔe % Ø = wa 'put up pl. O'			tà # l = tleh sg., du. run uphill'		
2	7	14	2	13	
daʔewehwa		1s	tàts'əstleh		1d
daʔewɪwa		2s	tàghəstleh		3d
daʔehwa		3s			

In the forms in which a subject prefix does not occur in the position following mode (third person singular, first person dual/plural, third person dual/plural), the vowel of the conjugation marker is lost by conjugation vowel deletion. The remaining consonant becomes [h] in Slave, as in the derivation in (21).

Following other pronouns, segmentally, the *s*-conjugation marker shows up as it does after a disjunct prefix. However, the tonal portion of the conjugation marker is also present following the other pronouns. The tone appears on the vowel preceding the conjugation marker, just as it does with the *n*-conjugation marker. Examples are given in (25).

(25) *s*-imperfective, %__

Slave			Sekani		
dah # h = té 'put up animate O'			tà # h = chèh 'carry animate uphill'		
2	14		2	13	
danéwehté		1s - 2s	tànəsəschèh		
daséwɪhté		2s - 1s	tàsəsjhchèh		
daséhté		3s - 1s	tàsəhchèh		

In all persons, the tone of the conjugation marker surfaces on the vowel preceding the conjugation marker in both Slave and

Sekani. In the third person, the rule of conjugation vowel deletion illustrated elsewhere applies.

As with the *n*- imperfective forms in Sekani, the tone of the conjugation prefix appears following *ts'ə*- and *ghə*- if a position 7 pronominal prefix is present, as illustrated in (26). As can be seen by comparing (26) with (24), this tone appears only when the position 7 pronominal prefix is present.

- (26) *s*- imperfective, %__ (Sekani)
 tà # h = chèh 'carry animate O uphill'
 2 13
 tànəts'əhchèh 1p - 2s
 təsəghəhchèh 3p - 1s

Following other conjunct prefixes (theme, aspect), the formation of the *s*- conjugation imperfective is as illustrated in (27).

- (27) *s*- imperfective, +__
- | | | |
|------------------------------------|-----|-------------------------------------|
| Slave | | Sekani |
| tá # ne + Ø = shu 'drive ashore' | | tí'òn # də + Ø = tēh |
| 2 9 14 | | 2 9 13 'put
rocks in circle' |
| tárehshu | 1s | tí'òdēsēh |
| tánēyu | 2s | tí'òdēlēh |
| tárehshu | 3s | tí'òdēsēh |
| tárewíju | 1dp | tí'òdēsīyeh |
| tárahshu | 2p | tí'òd`aahēh |

When preceded by a position 9 prefix in Sekani, the *s*- of the conjugation prefix is deleted in 1s, 2s, and 2p forms. A change in vowel quality (ə-->e) occurs in all forms but the 1d. In the 2p, the sequence [ea] becomes [aa].

A second example of the Sekani *s*- imperfective is given in (28). In this example, the verb has the *h*- classifier while in the example in (27), the \emptyset - classifier is present.

(28) *s*- imperfective, +__ (Sekani)

tà # dlòwe # də + h = tsus	'carry clothlike O uphill,
2 3 9 13	laughing'
tàdlòwedèestsus	1s
tàdlòwedèęhtsus	2s
tàdlòwedèhtsus	3
tàdlòwedəsìtsus	1dp
tàdlòwedàahtsus	2p

The third person is formed as illustrated above for other positions. In this form in Sekani, the regular rule that changes /ə/ to [a] preceding a syllable final *h* is preempted by the rule that changes the /ə/ of a position 9 prefix to [e] before the *s*- conjugation prefix. In both languages, the tone of the conjugation marker appears on the syllable that precedes it (except in the Sekani 1dp form) and the vowel of the conjugation marker is deleted. The remaining consonant neutralizes to [h] in Slave. In Sekani, the *s*- of the conjugation prefix becomes [h] in *h*- classifier forms and remains [s] otherwise. The formation of the first and second person singular forms is different following theme/aspect prefixes than it is elsewhere. Discussion of the formation of this person is deferred until section 4.3, *s*- + perfective.

3.4 *gh*- imperfective (progressive)

The *gh*- (*y*- Slave / *gh*- Sekani) imperfective is used to form the progressive and the future.

The formation of the *gh*- imperfective in word-initial position and following a disjunct prefix is illustrated in (29) and (30) respectively.

- (29) *gh*-imperfective, ##__ (Slave)
 Ø = wee 'carry pl. O' (progressive)

14	
yehwee	1s
y _i wee	2s
yewee	3s

- (30) *gh*-imperfective, #__

Slave		Sekani
na # d = da	'sg. return'	dah # Ø = ?aɬ 'hold up compact
2 14		2 13 O'
rayehda	1s	daghəs?aɬ
ray _i da	2s	dagh _i ?aɬ
rayeda	3s	daghə?aɬ

In the second person forms, the deletion, raising, and nasalization rules seen earlier apply.

Following a conjunct prefix, the *gh*-imperfective is formed as expected in the first and second person forms. In the third person form, the vowel of the conjugation marker is deleted. Deletion of the conjugation vowel is more restricted in the *gh*-conjugation than in the others. With the *n*- and *s*-conjugation markers, the vowel always deletes in the third person of the imperfective mode, while in the *gh*-conjugation the vowel is deleted in the third person only when preceded by a conjunct prefix. The remaining *gh*- then combines with the preceding conjunct prefix to form a syllable of the shape *Ca*-. Examples are given in (31).

- (31) *gh*-imperfective, +__

Slave		Sekani
ne + Ø = sho	'drive'	tà # h = cheɬ 'carry animate O
9 14		2 13 uphill'
reyehsho	1s	tànəghəscheɬ 1s - 2s

reyiyo	2s	tàsəghj̥cheɬ	2s - 1s
rayo	3s	tàsahcheɬ	3s - 1s

3.5 Summary

The conjugation markers \emptyset -, *n*-, *s*-, and *gh*- can all occur in conjugation position along with \emptyset - imperfective in mode position, defining imperfective or progressive forms. The phonetic forms of the conjugation marker depend on what type of morpheme it follows and, in Sekani, what classifier follows it. Both the *n*- and *s*- conjugation markers have a tonal as well as a segmental representation.

4. Perfective

The formation of the perfective is far more complex and far more variable amongst the various Athapaskan languages than that of the imperfective. The perfective, unlike the imperfective, shows clear evidence for two prefix positions, conjugation and mode. The formation of the perfective is affected not only by the position of the prefix preceding the conjugation marker, but also by which of the classifier prefixes is present.

4.1 *gh*- + perfective

4.1.1 *d*-, *l*- classifiers

In word-initial position or following a disjunct prefix, the perfective morpheme \tilde{n} - (Slave) /*n*- (Sekani) is always deleted with all conjugation markers when the classifier *d*- or *l*- is present. The occurrence of the perfective stem in *d*- and *l*-classifier forms suggests that the perfective morpheme should be analyzed as present underlyingly in these forms. In general, the occurrence of a particular stem form

(perfective, optative) is correlated with the presence of a particular mode marker.

(32) shows examples of the *gh*- perfective word initially in *d*- classifier verbs and (33) shows this conjugation marker following a disjunct prefix.

(32) *gh*- perfective, ##__

Slave		Sekani	
d = shen	'sing'	d-yhin	'sing'
14		13	
yehjɛ	1s	ghəsjin	
yijɛ	2s	ghijin	
yejɛ	3s	ghəjin	

(33) *gh*- perfective, #__

Slave		Sekani	
k'ina # d = lu	'drag around O'	nà # l = ts'ət	'sg., du.
2 14		2 13	'fall down'
k'inayehdlu	1s	nàghəsts'ət	
k'inayɪdlu	2s	nàghɪts'ət	
k'inayedlu	3s	nàghəts'ət	

Following a conjunct prefix in a verb with the *d*- or *l*-classifier, the formation of the *gh*- perfective is similar to the *gh*- imperfective. Examples are given in (34).

(34) *gh*- perfective, +__

Slave		Sekani	
xa # ya # de + d = tin	'pray'	ʔə % d = bàʔ	'child,
2 2 9 14		7 13	animal eat
			unspecified O'
xayadeyɛtɪ	1s	ʔəghəsbaʔ	
xayadeyɪtɪ	2s	ʔəghɪbaʔ	
xayadatɪ	3s	ʔabàʔ	

4.1.2 Ø-/*t- (h-) classifier

When the classifier is Ø- or h- (*t-), the formation of the perfective is different from that of the imperfective for all conjugation markers. The conjugation and subject markers combine with each other in the perfective of Ø- and h-classifier verbs in similar ways for all conjugation markers.

The gh- conjugation is formed in the same way whether the conjugation marker is word-initial, follows a disjunct prefix, or follows a conjunct prefix. The examples in (35) show this conjugation marker in the perfective mode in word-initial position.

(35) gh- perfective, ##__

Slave		Sekani
Ø = ʔá	'eat'	h = t'òch 'blow on O'
14		13
yíʔá	1s	ghiht'òch
yeneʔá	2s	ghjht'òch
yíʔá	3	ghjht'òch

In the first person singular, the subject prefix [i] occurs instead of [h] (Slave) or [s] (Sekani), as discussed in section 2. The rule of vowel deletion fails to apply in the second person singular Slave form, but does apply in Sekani. In the third person forms, the effect of the perfective marker ñ- / n- is evident through the raising and nasalization of the vowel of the conjugation marker.

An example of the gh- perfective following a disjunct prefix is shown in (36) for Slave.

(36) gh- perfective, #__ (Slave)

k'ína # Ø = lee	'carry aro'nd pl. O'
2 14	
k'ínayilee	1s
k'ínayenelee	2s
k'ínayjlee	3s

The *gh-* conjugation in this position is formed just as it is word initially.

Following a conjunct prefix, the *gh-* conjugation in the perfective is again formed as it is word initially. Examples are given in (37).

(37) *gh-* perfective, +__

Slave		Sekani
ʔe % de + Ø = tɬ'é	'write'	də + Ø = kwəs 'cough'
7 9 14		9 13
ʔedeyitɬ'é	1s	dəghikwəs
ʔedeyenetɬ'é	2s	dəghijkwəs
ʔedeyitɬ'é	3s	dəghijkwəs

4.2 *n-* + *n̄-*/*n-* perfective

4.2.1 *d-/l/* classifier

n-perfectives where the classifier is *d-* or *l-* are formed just like the imperfective. In (38), an example from Slave is given where the conjugation marker occurs word-initially.

(38) *n-* perfective, ##__ (Slave)

d = tɬa	'sg. go'
14	
rehɬa	1s
nɪɬa	2s
hɛɬa	3s

The rules of vowel deletion, raising, and nasalization apply in the second person form, as seen earlier. In the third person, conjugation vowel deletion and epenthesis apply.

Examples of the *n-* perfective following a disjunct prefix in a *d-* classifier verb are shown in (39).

(39) n- perfective, #__

Slave

Sekani

ní # na # d = ʔee	'return by	ɬàts'èʔ ## nè #d = yhi
2 4 14	boat'	2 13 'stop breathing'

rírareht'ee	1s	ɬàts'èʔ nènəsjɪ
-------------	----	-----------------

ríranjɪt'ee	2s	ɬàts'èʔ nènɪjɪ
-------------	----	----------------

rínɔt'ee	3s	ɬàts'èʔ nɛ̃jɪ, ɬàts'èʔ nènəjɪ
----------	----	-------------------------------

The vowel of the conjugation prefix is deleted in Slave following a vowel-final prefix in *d*- and *l*- classifier forms. It is optionally deleted following a vowel-final prefix in *d*-classifier forms. Following a consonant-final disjunct prefix, the vowel of the conjugation prefix is still deleted in Slave, with epenthesis then occurring, as shown in (40). The vowel is not deleted in Sekani.

(40) n- perfective

Slave

Sekani

teh # d = tla	'sg. go into water'	-ghonh # d = xin
2 14		1 13 'reach O, packing O'

terehɬa	1s	-ghɔhnəsgɪ
---------	----	------------

tenɪɬa	2s	-ghɔhnɪgɪ
--------	----	-----------

tehɛɬa	3s	-ghɔhnəgɪ
--------	----	-----------

If the classifier is *l*- in Sekani, conjugation vowel deletion does not occur in the third person singular forms following either a vowel- or consonant-final disjunct prefix. This is shown in the examples in (41) and (42).

(41) n- perfective, #__ (Sekani)

yidà # l = tla	'run inside'
----------------	--------------

2 13

yidànəstla	1s
------------	----

yidànjtla	2s
yidànətla	3s

- (42) *n*- perfective, #__ (Sekani)
 -ghonh # 1 = gèt 'reach O, crawling'
 1 13
 -ghohnəsgèt 1s
 -ghohnjgèt 2s
 -ghohnəgèt 3s

Following a conjunct prefix, the two classes observed in the *n*- imperfective are present. After a deictic prefix, raising is found in the third person and no tone appears. Following other conjunct prefixes, raising is not found in the third person and the tone of the conjugation marker surfaces. The latter type is shown in (43).

- (43) *n*- perfective, +__
- | Slave | | Sekani |
|---------------------|-------|------------------------------|
| -ghá # ye + d = chú | 'hand | che # chu # də + l = tla |
| 1 9 14 | sg. O | 2 3 9 13 'sg., du. |
| | to O' | run into water' |
| begháyérehshú | 1s | chechudənəstla |
| begháyénjshú | 2s | chechudənjtla |
| yegháyəshú | 3s | chechudətla |

In these paradigms, the tone of the conjugation marker surfaces on the thematic prefixes *ye*- (Slave) and *də*- (Sekani).

4.2.2 Ø-/h- classifier

The *n*- conjugation is formed similarly to the *gh*- conjugation with Ø- and *h*- classifiers. The tonal portion of the conjugation marker surfaces on the syllable preceding the conjugation marker after conjunct prefixes other than the deictics.

A Slave example of the *n*- conjugation marker in word-initial position in the perfective of a verb with a Ø- classifier is shown in (44).

- (44) *n*- perfective, ## __ (Slave)
 ten gha ## Ø = ge 'make hole through ice with chisel'
 ice through 14

tɛ gha rige	1s
tɛ gha renege	2s
tɛ gha nige	3s

[i] occurs in the first person singular, [ne] in the second person singular, and raising and nasalization of the vowel of the conjugation marker in the third person singular.

(45) shows a Slave example of the *n*- conjugation marker in the perfective following a disjunct prefix.

- (45) *n*- perfective, # __ (Slave)
 ní # Ø = la 'place pl. O'
 2 14

rírila	1s
rírenela	2s
rínjila	3s

A Sekani example is given in (46).

- (46) *n*- perfective, # __ (Sekani)
 -ghonh # h = tsùz 'reach O, carrying clothlike O'
 1 13

-ghɔhnihtsùz	1s
-ghɔhnihtsùz	2s
-ghɔhnihtsùz	3s

In (47), the *n*- conjugation marker is shown following the prefix ʔe- /ʔə-, and in (48), paradigms representative of the *n*-

conjugation perfective following other conjunct prefixes are provided.

(47) *n-* perfective, %__

Slave		Sekani
-ghá # ʔe % h = tsi	'pierce, poke	-gha # ʔə % Ø = yhàts
1 7 14	through O'	1 7 13 'scare O'
begháʔerihsi	1s	-ghaʔəniyàts
begháʔerenehsi	2s	-ghaʔəniyàts
yegháʔenihsi	3s	-ghaʔəniyàts

(48) *n-* perfective, +__

Slave		Sekani
keh # téé + de + Ø = la	'spread out	u + h = t'ow
2 5 10 14	piece by piece'	9 13 'take
		shot at O'
kehtëédérila	1s	ùniht'ow
kehtëédérenela	2s	ùniht'ow
kehtëédénjla	3s	ùniht'ow

With the conjunct prefixes other than the deictics, the tonal portion of the *n-* conjugation marker is present.¹⁰

4.3 *s-* + perfective

4.3.1 *Slave s-perfective*

4.3.1.1 *d-/l- classifier*

The *s-* (*w-*) conjugation is formed in the same way in perfectives with *d-* and *l-* classifiers as it is in the imperfective, as was the case with the other conjugation markers. Word-initially and following a disjunct prefix, the derivation of *s-* conjugation forms is as illustrated for the imperfective. The vowel of the conjugation marker is lost in the third person and the tone of the conjugation marker is deleted in all persons. (49) shows an example where the conjugation marker is word-

initial and (50) is an example where it follows a disjunct prefix.

- (49) s- perfective, ##__ (Slave)
 d = shon 'be old, grow old'
 14
 wehjɔ 1s
 wɪjɔ 2s
 hehjɔ 3s
- (50) s- perfective, #__ (Slave)
 ná # 1 = sée 'hunt'
 2 14
 ráwehzée 1s
 ráwɪzée 2s
 ráhzée 3s

Following a conjunct prefix, the formation of the *s*-conjugation perfective is more diverse. After the deictic prefixes, it is formed as it is word-initially, with the vowel deleting in the third person and the tone of the conjugation marker being deleted everywhere.

- (51) s- perfective %__ (Slave)
 ka # ná # ʔe % d = wa 'undress oneself'
 2 2 7 14
 karáʔewehgwa 1s
 karáʔewɪgwa 2s
 karáʔehgwa 3s

Following other pronominal prefixes, the segmental phonology is the same. However, the tone of the conjugation marker surfaces on the syllable preceding the conjugation marker.

(52) s- perfective, %__ (Slave)

ʔede % d = h = k'é	'shoot oneself'
7 14 14	
ʔedéwehk'é	1s
ʔedéewik'é	2s
ʔedéhk'é	3s

Following theme/aspect prefixes, the *w*- conjugation is formed as shown in the example in (53a). (53b) shows the imperfective of the same verb, where the conjugation marker is \emptyset .

(53 a) s- perfective, +__ (Slave)

xa # de + d = dze	'eat up pl. O'
2 10 14	
xádehdze	1s
xádędze	2s
xadéhdze	3s
xadéwídze	1dp

b) \emptyset - imperfective, +__ (Slave)

xa # de + d = dzee	'eat up pl. O'
2 10 14	
xadehdzee	1s
xadjdzee	2s
xadedzee	3s
xadídzee	1dp

The *w*- conjugation marker is deleted in the perfective paradigm. The fact that a conjugation morpheme other than \emptyset - is present in (53a) can be seen by comparing the perfectives in (53a) with the imperfectives in (53b). These paradigms differ, suggesting the presence of an additional morpheme in the perfective. This morpheme is not the perfective marker, since it is deleted with *d*- and *l*- classifier verbs. Instead, it is the *w*-conjugation marker. Only in the first person duoplural form is the segmental portion of this conjugation marker realized. In

the other persons, its presence is detectable through the tones, the lack of raising of the vowel in the second person singular, and the [h] in the third person singular, which results from the consonant that remains after the rule of conjugation vowel deletion applies. These forms require a different rule of conjugation tone mapping than the one seen so far. This rule, which applies only in the first and second person singular forms, places the tone one syllable further to the left than expected. This rule applies only in *w*- conjugation forms when the conjugation marker follows a theme/aspect prefix. With *d*- and *l*- classifiers, the *w*- perfective is formed in the same way as the *w*- imperfective.

4.3.1.2 *Ø-/h-* classifier

Word-initially, and following a disjunct prefix, the *w*- conjugation perfective is formed as shown in (54) (word-initial position) and (55) (following a disjunct prefix).

- (54) s- perfective, ##__ (Slave)
- | | |
|----------|---------|
| h = tsen | 'smell' |
| 14 | |
| wihse | 1s |
| wenehse | 2s |
| wehse | 3s |
- (55) s- perfective, #__ (Slave)
- | | |
|--------------|---------|
| ná # Ø = tin | 'dream' |
| 2 14 | |
| ráwitj | 1s |
| ráwenetj | 2s |
| ráwetj | 3s |

Except for the third person forms, these are like other perfectives with the *Ø-/h-* classifiers. In the first person singular, [i] occurs and [ne] is found in the second person singular. In the third person singular, the nasalized vowel that

has been evident with the other conjugation markers when the \emptyset - or *h*- classifier is present is not found.

With the \emptyset - and *h*- classifiers, the perfective marker *ñ*- has a phonological effect, unlike with the *d*- and *l*- classifiers. This is seen in forms like (55) as contrasted with those in (50). Other evidence for the presence of the perfective marker in these forms comes from the use of the perfective stem form. In general, this stem form occurs only when there is a perfective morpheme in the verb prefix complex.

Following the deictics, the *w*- conjugation marker is formed as shown in (56).

(56) *s*- perfective, %__ (Slave)

tá # yá # ?e % \emptyset = dla	'tear to pieces'
2 3 8 14	
táyá?ewidla	1s
táyá?ewenedla	2s
táyá?edla	3s

The first and second person singular forms are formed just as they are when a disjunct prefix precedes the conjugation marker. In the third person, the conjugation marker is lost entirely.

Following other pronominal prefixes, the tonal portion of the *s*- conjugation marker is present phonetically. Otherwise, it is formed like it is following the deictic prefixes, with the segmental portion of the conjugation marker deleted in the third person singular forms.

(57) *s*- perfective, %__ (Slave)

\emptyset = ts'e	'scratch'
14	
néwits'e	1s - 2s
séwenets'e	2s - 1s
yéts'e	3s - 4

After the theme/aspect conjunct prefixes, the segmental portion of the *w*- conjugation marker is lost in all persons but the first person duoplural. The tone is present in all persons, occurring on the syllable preceding the conjugation marker in all persons except the first person singular and second person singular where it appears another syllable to the left, just as with the *d*- and *l*- classifiers. An example is shown in (58a). The imperfective, with \emptyset - conjugation, is shown for comparison in (58b).

(58 a) *s*- perfective, +__ (Slave)

?e % ne + \emptyset = ?in 'steal unspecified O'

7 9 14

?ére?i 1s

?éne?i 2s

?eré?i 3s

?eréwít'i 1dp

b) \emptyset - imperfective, +__ (Slave)

?e % ne + \emptyset = ?in 'steal unspecified O'

7 9 14

?ereh?i 1s

?en?i 2s

?ere?i 3s

?erít'i 1dp

While the segmental part of the *s*- conjugation marker is lost in the perfective in forms other than the first person plural, as shown in (58a), the fact that the conjugation marker in (58a) is indeed *s*- and not \emptyset - can be seen by contrasting it with the \emptyset -imperfective in (58b), where no tones are present.

4.3.2 *Sekani s*- perfective

The classifiers determine the surface form of the *s*- conjugation prefix (following deletion of its vowel in the third person

singular forms). The surface form of the *s*- conjugation prefix is summarized in (59).

(59)	Ø-	h-	d-	l-
imperfective	s-	h-	s-	s-
perfective	z-	h-	s-	h-

Although the perfective prefix *n*- is always absent in the *s*-conjugation, the differences between imperfective and perfective morphology in the Ø- and *l*- classifier forms indicate that the *s*- imperfective and perfective are not identical in their formation. Positing an underlying prefix *n*- in the perfective forms would be one way to account for these differences.

4.3.2.1 Word-initial position

In paradigms in which the *s*- conjugation prefix is word-initial or follows a disjunct prefix, the application of conjugation vowel deletion depends on which classifier prefix is present.

The formation of the *s*- perfective when the Ø- or *h*- classifier prefix is present is illustrated in (60).

(60)	s- perfective, ##__ (Sekani)
h = ch'egh	'roast O'
13	
sihch'egh	1s
sihch'egh	2s
sahch'egh	3s

The conjugation vowel has not been deleted in the third person singular form in (60), where the *h*- classifier is present. However, when the *d*- classifier is present, the vowel of the conjugation prefix is deleted, as shown in (61).

(61)	s- perfective, ##__ (Sekani)
d = yhi	'breathe'
13	
səsjɪ	1s

sji	2s
əsjɪ	3s

If the *l*-classifier is present, then the vowel of the conjugation prefix is not deleted in the third person singular form and the classifier *l*- shows up on the surface as [h] in this form.

(62) s- perfective, ##__ (Sekani)	
l = tsəl	'be wet'
13	
səstsəl	1s
sɪtsəl	2s
sahtsəl	3s

4.3.2.2 *Following a disjunct prefix*

The formation of the *s*- perfective following a disjunct prefix in Sekani is similar to forms in which it is word-initial.

When the classifier prefix is \emptyset - or *h*-, the vowel of the conjugation marker is not deleted in the third person singular form.

(63) s- perfective, #__ (Sekani)	
ɬè # \emptyset = tɬ'un	'tie together'
2 13	
ɬèsɪtɬ'ɥ	1s
ɬèsɪtɬ'ɥ	2s
ɬesətɬ'ɥ	3s

The vowel of the conjugation prefix is optionally deleted in the third person singular if the classifier is *l*-.

(64) s- perfective, #__ (Sekani)	
-ka # nə # l = dzət	'hunt for O'
1 2 13	
-kanəsəsdzət	1s

-kanàsɪdzət	2s
-kanàhdzət,	3s
-kanàsədɪt	

In the third person singular form in which the conjugation vowel has been deleted, the remaining *s-* of the conjugation prefix has become [h]. The rule that changes /s/ to [h] is different from the Slave rule of neutralization in that Sekani /s/ to [h] is morphologically restricted, applying only before the *h-* and *l-* classifiers.

When the *d-* classifier is present, conjugation vowel deletion always occurs in the third person singular forms.

(65) s- perfective, # __ (Sekani)	
na # d = kwi	'vomit'
5 13	
nasəskwi	1s
nasɪkwi	2s
naskwi	3s

4.3.2.3 *Following a conjunct prefix*

Following a conjunct prefix, the vowel of the conjugation prefix is always deleted in the third person singular, regardless of which classifier prefix is present.

Following the position 7 pronouns other than ʔə-, the tone of the conjugation prefix appears on the pronominal prefix.

(66) s- perfective, % __ (Sekani)	
Ø = ch'q	'shoot O dead'
13	
nəsich'q	1s - 2s
səsɪch'q	2s - 1s
yəzch'q	3s - 4

Following the deictic prefixes, the tone of the conjugation prefix is absent unless *ts'ə-* or *ghə-* is preceded by a pronominal prefix other than *ʔə-*. Compare the paradigms in (67) and (68).

(67) *s-* perfective, %__ (Sekani)

chu # na # ʔə % d = k'əts	'wash O'
3 5 7 13	
chunaʔəsk'əts	3s
chunaʔəts'əsk'əts	1p
chunaʔəghəsk'əts	3p

(68) *s-* perfective, %__ (Sekani)

Ø = ch'q	'shoot O dead'
13	
ghuts'əzch'q	1p - 3p
xwəghəzch'q	3p - 1p

Following a *ə*-final position 9 prefix, several changes occur: the *ə* of the conjunct prefix becomes [e], the *s-* conjugation prefix is deleted in the first person singular, second person singular, and second person plural forms, and long vowels appear in these latter forms by the application of vowel assimilation rules. The examples in (69) show the *s-* conjugation perfective following a conjunct prefix with each of the four classifiers.

(69) *s-* perfective, +__ (Sekani)

a) Ø- classifier

nə + Ø = ʔ _i	'steal O'
9 13	
nèeʔ _i	1s
nèeʔ _i	2s

nèzʔj	3s
nàaʔj	2p
cf. nə- in nəʔjh	3s imperfective
b) h- classifier	
zə + h = xin	'kill sg. O'
9 13	
zèhxj	1s
zèɛhxj	2s
zèhxj	3s
zàahxj	2p
cf. zə- in zəsxeh	1s imperfective
c) d- classifier	
dah # na # ghə + d = tl'un	'tie up O'
2 5 9 13	
danaghèestl'ʊ	1s
danaghèɛtl'ʊ	2s
danaghèstl'ʊ	3s
danaghàahtl'ʊ	2p
cf. ghə- in danaghətl'ʊh	3s imperfective
d) l- classifier	
nà # nə + l = ʔj	'sneak around'
2 9 13	
nànèesʔj	1s
nànèɛʔj	2s
nànèhʔj	3s
nànàahʔj	2p
cf. nə- in k'ènəʔjh	3s imperfective

4.4 Summary

Perfective forms provide good evidence for two positions, conjugation and mode. In third person singular *gh-* and *n-* perfective forms of \emptyset - and *h-* classifier verbs, the prefix sequences [gh_i-]/[y_i]- and [n_i-] are found, indicating that two prefixes are underlyingly present. Evidence from the *s-* perfective forms is less straightforward since the perfective prefix is always deleted in such forms.

So far, we have seen that the four conjugation markers (*s-*, *n-*, *gh-*, and \emptyset -) combine with the imperfective and perfective mode prefixes (\emptyset - and *ñ-/n-*).¹¹ In the next section, we will provide evidence that the conjugation markers also occur with the optative mode prefix.

5. Optative

5.1 \emptyset - optative

The \emptyset - optative is the form that has been generally identified as the optative in earlier work on Slave. Its formation in word-initial position is shown in (70).

(70) \emptyset - optative, ##__

Slave		Sekani
d = shen	'sing'	h = yhòt 'blow on O'
14		13
wohjẹ/ghwohjẹ	1s	wəsyhòt
wqjẹ/ghwqjẹ	2s	ghqhyhòt
wojẹ/ghwojẹ	3s	wahyhòt
wíjẹ	1dp	ghùyhòt
wahjẹ/ghahjẹ	2p	wahyhòt

In the Sekani form in (70), the optative prefix /gho/ is diphthongized to [ghwə] in the first and third person singular forms. Following diphthongization, the rule lowering ə to [a] before syllable final *h* applies in the third person singular form.

(71) is an example from Slave of the Ø- optative following a disjunct prefix. In this position, it is formed just as it is word-initially.

- (71) Ø- optative, #__ (Slave)
- | | |
|--------------|-----------------|
| lé # Ø = tsi | 'break in half' |
| 2 14 | |
| léwohsi | 1s |
| léwqsi | 2s |
| léwosi | 3s |

Following a conjunct prefix, the form of the optative is somewhat different. (72) is an example of the optative following the pronoun ?e- 'unspecified object' in Slave.

- (72) Ø- optative, %__ (Slave)
- | | |
|-------------------|---------|
| ná # ?e % Ø = dló | 'laugh' |
| 2 7 14 | |
| rá?uhdló | 1s |
| rá?ewqdló | 2s |
| rá?udló | 3s |

(73) shows the optatives following theme/aspect prefixes in Slave and Sekani.

- (73) Ø- optative, +__
- | Slave | | Sekani |
|-------------------|------------------|-------------------------|
| de + ne + Ø = shu | 'start to drive' | nə + Ø = ?inh 'steal O' |
| 10 9 14 | | 9 13 |
| deruhshu | 1s | nus?jh |

derewoyu	2s	nəghoʔɪh
deruyu	3	nuʔɪh
derewɪju	1dp	nəgh`uch'ɪh
derewahshu	2p	nəwahʔɪh

In Slave, the optative morpheme has the underlying representation /ghu/. The initial consonant is lost following a conjunct prefix in the first and third person forms, followed by an independently required rule of vowel deletion. Elsewhere *u* lowers to *o* after *gh*. The /gh/ becomes [w] or is labialized to [ghw] before a round vowel. Before a high front vowel, it becomes [w], and it remains [gh] or becomes [w] before [a]. A derivation of the third person form of (73) is shown in (74).

- (74) /de + ne + ghu + shu/
 de + ne + u + shu *gh* deletion
 de + n + u + shu vowel deletion
 [deruyu] other rules

To account for the optative forms in Sekani, the optative prefix /gho/ first diphthongizes to [ghwə] in all but the second person singular form. Since diphthongization does not apply to [ɔ], it fails to apply in the second person singular forms. Then [wə] becomes [u] following a conjunct prefix.¹² Finally, vowel deletion applies, as in Slave. A derivation of the third person form in (73) is given in (75).

- (75) /nə + gho + ʔɪh/
 nə+ghwə+ʔɪh diphthongization
 nə+u+ʔɪh transfer of rounding (ghwə --> u)
 [nuʔɪh] vowel deletion

5.2 *gh*- optative

gh- optatives are uncommon. The optative of a progressive verb may occur with the *gh*- conjugation marker, as shown in (76), although it more commonly occurs with \emptyset -.

- (76) *gh*- optative, # __ (Slave)
 dah # \emptyset = lee — 'pick up pl. O'
 2 14
 dayuhlee 1s
 dayewqlee 2s
 dayulee 3

The fact that such paradigms exist lends strong support to the hypothesis that conjugation and mode are two distinct positions since both a conjugation marker *gh*- (*y*-) and a mode prefix *ghu*- are segmentally present here. Such forms also support the ordering of these positions as conjugation followed by mode.

5.3 *n*- and *s*- conjugation optatives

The *n*- and *s*- conjugation optatives also lend support to the claim that conjugation and mode are two distinct positions. The evidence is somewhat less clear here since the conjugation markers surface only tonally, never segmentally. The deletion rules that normally apply in the optative (section 5.1) fail to apply.

The *n*- and *s*- conjugation optatives are formed in the same way. In both cases, the optative morpheme has the form [wo] in Slave and [wə] in Sekani in the first and third person singular forms regardless of its position. In addition, when it follows a conjunct prefix other than one of the deictics, the tonal portion of the conjugation marker surfaces on the morpheme preceding the optative.

An example of an *n*- optative following the morpheme *ʔe*- 'unspecified object' in Slave is given in (77) and a *w*- conjugation optative in this position is shown in (78).

(77) *n*- optative, %__ (Slave)

-ghon ## ní # ʔe % Ø = ká	'lend contained O'
2 7 14	
beghɔ ríʔewohká	1s
beghɔ ríʔewɔká	2s
yeghɔ ríʔewoká	3s

(78) *s*- optative, %__ (Slave)

dah # ʔe % Ø =wa	'put up pl. O'
2 7 14	
daʔewohwa	1s
daʔewɔwa	2s
daʔewowa	3s

The rules that delete the *w* and the first of two vowels and were seen to apply in the Ø- optative forms fail to occur in these Slave forms. Note also the absence of the tone of the conjugation marker on *ʔe*-.

In Sekani, the [u] alternant of the optative prefix appears when a deictic prefix immediately precedes the optative prefix, unless a position 7 pronominal prefix precedes *ghə*- or *ts'ə*-.

(79) *n*- optative, %__ (Sekani)

-gha # ʔ TM % Ø = yhis	'scare O'
1 7 13	
-ghaʔəts'uyis	1p
-ghaʔəghuyis	3p

- (80) *n*- optative, %__ (Sekani)
 ts'e # h = sit 'wake up O'
 2 13
 ts'eghuts'àwahsit 1p - 3p
 ts'esəghàwahsit 3p - 1s

In these latter forms, the optative prefix [wə] fails to change to [u] even though it is preceded by a conjunct prefix. Note also that the tone of the conjugation prefix is present in (80), but not in (79).

After other conjunct prefixes, the deletion rules fail to apply and the tone of the conjugation marker is present. (81) is a Slave example of an *n*- optative.

- (81) *n*- optative +__ (Slave)
 ní #inde + ne + l = wi 'sg. arrive flying'
 2 9 9 14
 rñhìderéwohwi 1s
 rñhìderéewòwi 2s
 rñhìderéwowi 3s

(82) is an example of an *s*- optative where the conjugation marker follows a conjunct prefix.

- (82) *s*- optative, +__
- | Slave | | Sekani |
|--------------------|--------------------|----------------------------|
| w'i # de + d = tsi | 'stretch out arms' | ?ə % də + l = gùge 'squat' |
| 5 10 14 | | 7 9 13 |
| w'idéwohsi | 1s | ?ədəwəsg`uge |
| w'idéewòsi | 2s | ?ədəghog`uge |
| w'idéewosi | 3 | ?ədəwəg`uge |
| w'idéwísi | 1dp | ?ədəghùgùge ¹³ |
| w'idéwahsi | 2p | ?ədəwahgùge |

Before turning to the question of how to determine whether a particular verb has the *n*- or the *s*- conjugation marker in the optative, the question of how the particular conjugation marker found in a verb is determined will be briefly reviewed.

The occurrence of a particular conjugation prefix is, as discussed in section 2, basically predictable from morphological information. The verb themes are divided, according to phonological, morphological, and semantic criteria, into a number of verb theme categories. Each verb theme category is associated with a particular conjugation marker in the imperfective, perfective, and optative.

Thus in Slave and Sekani, as in other Athapaskan languages, there are limited combinations of conjugation markers that occur across modes. For instance, if the *n*-conjugation marker is found in the imperfective, then the *n*-conjugation marker must also occur in the perfective. The following chart shows the imperfective/perfective conjugation patterns that are found in Slave and Sekani.

(83) imperfective	perfective
Ø-	Ø-
	s-
	gh-
n-	n-
s-	s-

If the imperfective has the Ø- conjugation marker, then Ø-, *s*-, or *gh*- can occur in the perfective. However, if the conjugation marker in the imperfective is *n*- or *s*-, then the same conjugation marker must be present in the perfective.

Now, what about the optatives? The *n*- and *s*- conjugation markers are clearly associated with tones, which can surface in all modes. In the optative, the *n*- and *s*- conjugation markers have the same form since only the tonal portion surfaces. How then is it possible to know whether a particular optative has the *n*- or the *s*- conjugation marker? The answer to this question becomes clear when entire paradigms are examined.

By looking at entire paradigms, one can fit the optative into the pattern shown above.

(84) imperfective	perfective	optative
Ø-	Ø-	Ø-
	gh-	
	s-	
n-	n-	n-
s-	s-	s-
gh-	gh-	gh- or Ø

Basically, whatever conjugation marker is present in the imperfective will also be present in the optative. It is from this paradigmatic knowledge that the identity of the conjugation marker in the optative is available.

5.4 Summary

We have seen evidence for two verb prefix positions, conjugation and mode, that are structured as shown in (85).

(85) conjugation	mode
Ø-, n-, s-, gh-	imperfective
	perfective
	optative

The morphemes in these positions combine with each other. For any particular lexical item, only one of the six patterns shown in (84) is available.

6. Summary

The overall model that we propose is summarized below:

There are two verb prefix positions, conjugation and mode. The morphemes Ø-, n-, s-, and gh- occur in conjugation position. The morphemes in mode position are Ø-

imperfective, \tilde{n} -/n- perfective, and ghu-/gho- optative in both languages. In addition, Sekani has another restricted mode morpheme *ghə*- 'future.' A restricted number of conjugation patterns are found.

This model has been tested in two languages, Slave and Sekani, in this paper. Similar models have been proposed for Navajo (Kari 1976) and Ahtna (Kari 1979), where (in Ahtna) the prefixes appear to distribute themselves amongst three positions because of the existence of negative verb morphology. In order to see if the model is accurate for Athapaskan as a whole, it must be tested against other languages. The evidence for two prefix positions seems relatively strong. A major question is how the morphemes distribute themselves in these positions in the various languages.

Notes

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- 1. We will generally use orthography rather than transcription in the discussion. It should be noted that

Hare *ee* is phonetically a diphthong [i̯e] or a tense vowel [e] and is not a long vowel. Sekani *yh* is phonetically [ç]. Sekani [ə] is variable in quality and it is only in the case of this vowel that we depart from use of the orthography. We use *gh* rather than *γ*.

2. In the discussion, we will refer to the reflex of these reconstructed forms in whatever language is under consideration.
3. The pattern *gh*- conjugation, *ghu*- optative is rare, but does occur.
4. Some notes on Hare phonology are in order. First, all /n/'s become [r] before an oral vowel. /ñ/ does not become [r], but is always realized as nasalization or as [n]. Second, voiceless unaspirated affricates /ts/, /tʃ/, and /ch/ deaffricate to [s], [tʃ], and [sh] respectively. Third, while most fricatives are best considered to be underlyingly unmarked for a value of the feature [voice] (see Rice forthcoming for discussion), there are no alternations between [l] and [ɭ] or between [w] and [wh], but only the voiced member is found. These fricatives are considered to be underlyingly voiced. Finally, while high tones are written on verb stems in Hare, they occur phonetically on the syllable preceding the stem.
5. We are here suggesting a rule of conjugation vowel deletion that deletes a vowel when no phonological

material intervenes between the conjugation marker and the classifier. Another possibility, one explored in Hargus 1987 for Navajo, is to establish underlying representations for the conjugation markers as *s-* and *n-* rather than *sV-* and *nV-*. If this is done, the general rule of vowel epenthesis must be formulated to insert a vowel in the forms where the conjugation marker is syllabic.

6. In Sekani, the vowel of the *n-* conjugation prefix is not deleted in the third person singular forms of *d-* and *l-* classifier verbs following a disjunct prefix. An example with the *d-* classifier is given in (i).

i. -ghonh	# d = xèh	'reach O, packing O'
1	13	
-ghòhnəsgèh		1s
-ghòhnjgèh		2s
-ghòhnəgèh		3s

7. Sekani *ts'ə-* is primarily a first person plural subject prefix. However, in derived nominal expressions it functions as an unspecified human number prefix.
8. Following *ts'ə-* and *ghə-* in Sekani, the form of the conjugation prefix depends on whether a pronominal prefix of position 7 is also present. As discussed in the text below, the conjugation prefix has a tonal portion as well as a segmental portion. The tonal portion is absent following *ts'ə-* and *ghə-* when no pronominal position 7

prefix is present or if this prefix is ʔə- 'unspecified object.'

- i. -chon # ʔə % Ø = tɛh 'take guts out of O'
 3 7 13
 -choʔəts'ɪleh 1p
 -choʔəghɪleh 3p

However, the tonal portion appears if a pronominal prefix other than ʔə- precedes ts'ə- or ghə-.

- ii. ts'e # h = sit 'wake up O'
 2 13
 ts'eghuts'ɪhsit 1p - 3p
 ts'esəghɪhsit 3p - 1s

Further exemplification of this phenomenon is provided below and in Hargus (1987).

9. If *l*- classifier is present in the paradigm, conjugation vowel deletion does not apply.

- i. tà # l = tleh 'sg., du. run uphill'
 2 13
 tàsəstleh 1s
 tàsjtleh 2s
 tàsətleh 3s

Sekani *n*- and *s*- imperfective paradigms thus differ with respect to whether conjugation vowel deletion applies in *l*- classifier forms.

10. Just like the *s*- and *n*- imperfective, tones appear in the Sekani *n*- perfective following the conjunct prefixes *ts'ə*- and *ghə*- if these are preceded by a pronominal prefix of position 7 other than *ʔə*-. Compare the forms in (i) and (ii).

- i. -gha # wə % Ø = ʔon 'give area to O'

1 7 13

-ghawəts'ənɿʔɔ 1p

-ghawəghənɿʔɔ 3p

- ii. -gha # ʔə % Ø = yhàts 'scare O'

1 7 13

-ghaʔəts'ənɿyàts 1p

-ghaʔəghənɿyàts 3p

11. A fourth conjugation class of the perfective, Ø-perfective, also exists in both of the languages, marked by Ø- conjugation + *ñ*- / *n*- mode prefixes. The formation of this category is complicated and not presently fully understood. For reasons of space, it has not been illustrated here. The form of the conjugation / mode markers after the prefix *í*- (Slave) / *ì*- (Sekani) is also worthy of discussion in a full treatment of conjugation and mode. It has not been discussed due to space limitations. See Rice (forthcoming) for discussion of the prefix *í*- in Slave.

12. The rule changing [wə] to [u] in Sekani following a conjunct prefix does not apply if the conjunct prefix is [u], and applies optionally if the conjunct prefix is [wə].
13. The tone of the conjugation marker is regularly deleted in first person duoplural forms. See Hargus 1985.

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Aspects of Logical Form in Navajo*

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0. Introduction

The present paper is a prolegomenon to an investigation, of which we hope to be a part, into the grammar and structure of Logical Form (LF) in Navajo. With certain exceptions (cf. Schaubert 1974), the use in Navajo of the general movement rule Move-Alpha (Chomsky 1981, and elsewhere) is confined to the LF level of representation. Our purposes at this stage are, first, to present certain data concerning three constructions assumed to involve the LF use of Move-Alpha and, second, to formulate a preliminary descriptive statement of an apparent limitation on the use of Move-Alpha. The constructions to be discussed are: relative clauses, content questions, and focus.

1. Putative movement in LF

As can be seen in (1) below, the Navajo relative clause, in the favored form, is not accompanied by a NP head in surface structure. Instead, the nominal expression corresponding to the head (i.e. the 'relative NP') appears overtly in its argument position internal to the relative clause, the latter being 'nominalized' by means of the definite determiner *-yéé* (*-éé*, *-áá*). In short, Navajo employs what is sometimes called the 'internally headed' relative clause.

- (1) [Tl'édáá' ashkii ałháá'áá] yádoołtih.
 ([last night boy snore-REL will:speak)
 'The boy who was snoring last night will speak.'
 (Platero 1974:204)

We will assume that the logical form of an internally headed relative clause is derived by movement, extracting the relative NP and adjoining it to the nominalized clause and leaving a trace in the source argument position (cf. Williamson 1984 and Cole 1987 for discussion of LF movement for this construction in other languages). Thus, the LF of the complex nominal subject of (1) is, we assume, as follows.

- (1') [[tl'édáá' t ałháá'áá]ashkii]

For some speakers, in fact, precisely this movement may take place in syntax, as well as LF, so that (1') is also, for those speakers, an acceptable surface structure (cf. Platero 1974, 1978).

For many speakers, movement in LF is not limited to particular arguments (subject, object oblique; first, second, ...) and a string of the type represented by (2) below is ambiguous, as indicated; for other speakers, however, the only easily available reading is that according to which the first argument (in this case, the subject) is relativized.

- (2) [Ashkii at'ééd yiyiiłtsá(n)-éé yałti'. (Platero 1974:205)
 (boy girl saw-REL speak)
 a) 'The boy who saw the girl is speaking.'
 b) 'The girl whom the boy saw is speaking.'

Content questions, of the type represented by (3) and (4) below, frequently take a form in which the question word appears *in situ*, accompanied by a particle (*lá*, or alternatively *-sh*) which appears either on the question word itself or else 'moved' to Wackernagel's (i.e. second) position in the clause over which the question word has scope in LF:

- (3) a) Jáan háí-lá yiyiítsá? (Schauber 1979:15)
 (John who-PRT saw)
 'Who did John see?'
 b) Jáan lá háí yiyiítsá?
- (4) a) Jáan ha'át'íí-lá nayiisnii'? (Schauber 1979:186)
 (John what-PRT bought)
 'What did John buy?'
 b) Jáan lá ha'át'íí nayiisnii'?

Following Huang (1982) and others, we take the position that a question word appearing *in situ* at surface structure is in fact moved in LF to the position defining its scope, i.e. to the relevant clause margin. We assume, in the absence of a detailed theory of Navajo phrase structure, that the moved element is simply adjoined, as in the case of LF relativization. Accordingly, the LF representation of (3) is approximately as follows:

(3') [[Jáan *t* yiyiítsá] háí]

Linear order here is irrelevant; mere typographical considerations force us to pick either right- or left-adjunction. Interestingly, however, the overt movement described by Schauber (1979) for Navajo direct questions is leftward, not rightward as depicted in (3') and as observed overtly in indirect questions (Schauber 1974, 1979) and relativization (Platero 1978). Our intent in (3') is to represent adjunction, not directionality.

Finally, we propose that the Navajo focus constructions (as in (5-8) below) also involve movement in LF. A focussed constituent is marked with one or another of the focus particles, e.g., the positive *ga'*, the negative *hanii*, as below, the interrogative *-ish* (cf. Schauber 1979), or the element *ndi* 'even', not illustrated here.

- (5) Ashkii ga' ʔíí' nabiiʔgo'. (Schauber 1979:177)
 (boy FOC horse threw)
 'It's the BOY that the horse threw.'
 'The horse threw the BOY.'
- (6) Ashkii ʔíí' ga' nabiiʔgo'. (Schauber 1979:178)
 boy horse FOC threw
 'It's the HORSE that threw the boy.'
 'The HORSE threw the boy.'
- (7) Jáan hanii chidí yiyíʔchq'. (Chii ga'.)
 (John NEGFOC car wrecked) (Chee FOC)
 'It's not JOHN that wrecked the car.' ('It's CHEE'.)
 'JOHN didn't wreck the car.' ('CHEE did'.)
 (cf. Perkins 1978:25)
- (8) Jáan chidí hanii yiyíʔchq'. (Tsinaabąąs ga'.)
 (John car NEGFOC wrecked) (wagon FOC)
 'It's not the CAR that John wrecked.' ('It's the WAGON'.)
 'John didn't wreck the CAR.' ('But rather the WAGON'.)

If we are correct in maintaining that focus involves LF movement, then the LF representation of (5), for example, is approximately as in (5') -- again, the directionality is immaterial, only the adjunction site matters, and we take this to be the maximal projection dominating the original string, as before:

- (5') [[t ʔíí' nabiiʔgo'] ashkii ga']

In addition to the three constructions illustrated above, we will briefly consider the possibility that the Navajo process sometimes called Subject-Object Inversion also involves movement in LF. Subject-Object Inversion is the principle

which relates sentences of the type represented by the pair (9-10) below. The first of these exhibits the order SOV, the 'unmarked' order for sentences of this specific type (i.e. in which the subject and object both refer to humans and are therefore 'equal' in rank, cf. Hale 1973 and Creamer 1974), while the second exhibits the order OSV and is normally felt to be marked, in the sense that the 'inverted' object is specifically the topic in a clearly discernible topic-comment partitioning of the clause.

- (9) Ashkii at'ééd yi-yiłtsá. (cf. (2) above)
 (boy girl yi-saw)
 'The boy saw the girl.'

- (10) At'ééd ashkii b-iiłtsá.
 (girl boy bi-saw)
 'The boy saw the girl (speaking of the latter).'

The set (11-13) below illustrates the fact that inversion is not limited to the direct arguments of a verb. And to the extent that topicalization is involved in Subject-Object Inversion, it is clear from (13), and from any number of other sentences which could be constructed, that the 'topic' is not fully extracted from its clause in syntax; i.e. inversion does not involve *overt* extraction and adjunction, only apparent 'inversion'. It is nonetheless reasonable to ask, as we will here, whether the topicalizing effect sometimes felt to be present in the *bi-* form (as in (11, 12, 13) is due to LF movement of the type suggested above for relativization, question-formation, and focussing.

- (11) At'ééd awéé' ashkii yi-ł y-oolóós.
 (girl baby boy yi-with yi-lead)
 'The girl is leading the boy and the baby.'
 (Perkins 1978:115-116)

- (12) At'ééd awéé' ashkii yi-t b-oolóós.
 (girl baby boy yi-with bi-lead)
 'The girl is leading the girl and the baby.' (speaking of the girl)
- (13) At'ééd awéé' ashkii bi-t y-oolóós.
 (girl baby boy bi-with yi-lead)
 'The girl is leading the baby and the boy.' (speaking of the baby)

Whether or not Subject-Object Inversion involves movement in LF, we believe that it is correct to propose that Navajo does utilize Move-Alpha in defining the logical form of certain sentences. The effect of the rule is to adjoin a relativized, questioned, or focussed constituent NP (in the cases so far considered) to a maximal projection (XP) which dominates it, as depicted in (14) below:

- (14) [XP [XP ... *t* ...] NP] (direction immaterial)
 -----↗

In the following section, we make certain elementary observations on multiple applications of this assumed LF movement in Navajo.

2. Double extractions

In his important study of Navajo relative clauses, Platero (1974) observed that sentence (15) below cannot receive an interpretation according to which both *hastiin* 'the man' and *chéecháa'í* 'the dog' are relativized:

- (15) *Hastiin *łééchaą́'í* bishxash-éę be'eldóh néidiitá(n)-
 éę nahał'in
 (man dog bit-REL gun picked:up-REL bark)
 NOT = *The dog that the man who was bitten by
 picked up the gun is barking.' (Platero 1974:220)

The Navajo string (15) can, with some difficulty, receive a 'stacked reading' such as 'the man that the dog bit (and) that picked up the gun...' or 'the dog that bit the man (and) that picked up the gun...'. Such readings are irrelevant to our purpose here. The point is, the string does not have an interpretation according to which *hastiin* 'man' is relativized at the innermost clause and in which *łééchaą́'í* 'dog' is relativized at the next clause up. Thus, the relevant derived LF structure here has approximately the following form, with *t1* the trace of *man*, *t2* the trace of *dog*.

- (15') [[[[*t1* *t2* bit-REL]man] gun picked:up-REL] dog]
 bark]

Given the fact that (15'') below, under the interpretation given, is a perfectly well-formed relative clause, it is evident that the relation between *t1* and *man* in (15) is permissible:

- (15'') *hastiin łééchaą́'í* bishxash-éę
 (man dog bit-REL)
 'the man whom the dog bit'
 'the man who was bitten by the dog'

And the fact that the string (15'') also represents a relative clause with the meaning *the dog that bit the man* indicates that there is nothing in principle blocking LF extraction of *dog*. Evidently, therefore, the problem with (15), under the interpretation we are considering, is that the extraction of *dog* is in some sense 'too long' in that it crosses some barrier or barriers. As Platero suggested, the excluded interpretation of

(15) has the character of an island violation in the sense of Ross (1967) -- specifically, the Complex NP Constraint, a special case of the Subjacency Condition of Chomsky (1973, 1985), which prevents extraction from relative clauses and certain other structures headed by lexical nominals. If this is true, then we are presumably justified in our suggestion that Navajo relativization involves movement in LF, even in the favored type of relative clause, where no syntactic movement occurs (assuming, of course, that LF movement is constrained by subjacency, which is by no means clear; cf. Huang 1982).

If double extraction in relativization yields ungrammaticality, then we might expect to observe the same effect in the case of the other putative LF movement constructions. Thus we might expect double questions to be ill-formed. And this appears to be the case (but see below):

- (16) *Hái-lá ha'át'í'lá nayiisnii?
 (who-PRT what-PRT bought)
 'Who bought what?'

This is ill-formed as given, with the particle *-lá* present on each question word; if this is removed from one of them, say the second, then the sentence is grammatical for some (but not all) speakers. We will restrict our attention first to the type represented by (16) as given, under the assumption that the presence of the particle is associated with separate LF movement and adjunction of the question word to which it is attached, while the absence of a particle involves some other process which, in some manner or other (as yet unknown), licenses double extraction. We will assume, in the case of (16), that a barrier, or barriers, block LF extraction and adjunction of one of the question word expressions.

The same effect is evidently true of the focus constructions, as in (17), and of a content question containing a focussed element, as in (18):

- (17 a) *Ashkii ga' $\dot{\lambda}\dot{\lambda}\dot{\lambda}$ ' ga' nabííłgo'.
 (boy FOC horse FOC threw)
 b) *Ashkii hanii $\dot{\lambda}\dot{\lambda}\dot{\lambda}$ ' hanii nabííłgo'.
 (boy NEGFOC horse NEGFOC threw)
 c) *ashkii hanii $\dot{\lambda}\dot{\lambda}\dot{\lambda}$ ' ga' nabííłgo'.
 (boy NEG FOC horse FOC threw)
 d) *Ashkii ga' $\dot{\lambda}\dot{\lambda}\dot{\lambda}$ ' hanii nabííłgo'.
 (boy FOC horse NEGFOC threw)
- (18) *Hái-lá $\dot{\lambda}\dot{\lambda}\dot{\lambda}$ ' ga' nabííłgo'. (Schauber 1979:178)
 (who-PRT horse FOC threw)

The ill-formedness of a sentence like (17c), for example, is roughly comparable to that of such English 'double clefts' as *'It wasn't the boy that it was the horse that threw'; and (18) is roughly comparable to the ill-formed *'Who was it the horse that threw?' It should nevertheless be mentioned that, for some speakers at least, (17a) can be spoken in a manner (i.e. with appropriate pausing) which renders it acceptable. This does not appear to be true of the others, however, and we will assume (correctly, we hope) that the special case of (17a) does not basically change the circumstance that double focus-extractions are not allowed. Again, therefore, it is evident that extraction and adjunction create a barrier (or barriers) for subsequent extraction.

If Subject-Object Inversion involves movement and adjunction of the sort suggested for relative clauses, content questions, and focus constructions, then we expect the ungrammaticality which is in fact observed in (19) below, a sentence which is essentially untranslatable, though readily understood as an attempt to say one of (11-13) above:

- (19) *At'ééd awéé' ashkii bi-ł b-oolóós.
 (girl baby boy bi-with bi-lead)(cf. (11-13) above)
 (Perkins 1978:116)

And the fact that the relative clause in (20) below is judged unambiguous (by most speakers) might be explained by the extraction-adjunction theory as well:

- (20) At'ééd ashkii b-iiłtsá(n)-éę yál'ti'. (cf. (2) above)
 (girl boy bi-saw-REL speak)
 'The girl whom the boy saw is speaking.'
 NORMALLY NOT: 'The boy who saw the girl ...'

The reported lack of ambiguity would follow from the fact that relativization of the non-topic (*ashkii* 'the boy') would require extraction over the putative prior adjunction resulting from Subject-Object Inversion.

While this seems reasonable, it is almost certainly incorrect. First, (20) is not unambiguous for all speakers, though the interpretation given is overwhelmingly preferred, due perhaps to the combined effect of the topicalizing character of the inversion and the strong tendency to take the first NP to be the relative NP in any event. Moreover, if Subject-Object Inversion is extraction and adjunction, then it should not co-occur with focus extraction or question extraction. But (21) and (22) are perfectly well-formed, contrary to this prediction. In (21), both Subject-Object Inversion and the putative question extraction are found; and in (22) both Subject-Object Inversion and focus extraction:

- (21) Ashkii háf-lá b-iiłtsá?
 (boy who-PRT bi-saw)
 'Who saw the boy?'
 (22) Ashkii at'ééd hanii b-iiłtsá.
 (boy girl NEGFOC bi-saw)
 'It wasn't the GIRL who saw the boy.'

From this we conclude that Subject-Object Inversion does not involve extraction and adjunction of the type under consideration here -- though it may involve movement of some

sort. We suspect that the rule, like the passive in English, restructures the subject-predicate relations of a clause. This would explain the ill-formedness of (19) above, since a predicate cannot have two subjects.

We will leave Subject-Object Inversion out of the picture hereafter and restrict our attention to the other constructions. Assuming that these latter do in fact involve extraction and adjunction, we can express the observed limitations on this operation in roughly the following form (where XP and YP are maximal X-bar projections):

- (23) The adjunction configuration
 [XP YP[XP is a barrier for extraction.

This will account for the relevant cases considered above -- i.e. (15-18) -- since, by hypothesis, each of those involves the forbidden movement, i.e., movement across the barrier defined by adjunction.

We turn now to a brief consideration of other interactions among applications of LF movement, with particular attention to potential counterexamples to (23).

3. Other cases of LF rule interaction

If sentence (15) above, a case of double relativization, is ill-formed because of extraction across the adjunction configuration created by the innermost relativization, the same effect is to be expected when a direct question is formed by extraction from a relative clause, as in (24) below:

- (24) *Ashkii ha'át'íí-lá nayiisnii'-éé yiniłtsá?
 (boy what-PRT bought-REL you:saw)
 'You saw the boy who bought what?'

The ill-formedness of (24), as a direct question, is as great as that of the English **What did you see the boy who bought?*, lending further support both to the suggestion that LF movement is involved in Navajo question formation and to the proposal that it is blocked by certain configurations, presumably configurations subsumed under (23).

It should be mentioned, as Paul Platero has pointed out (personal communication), that there is a version of (24) which is, to some extent at least, grammatical. In this version, the relative clause is supplied with an additional determiner -- the general, or present-tense, nominal determiner *-yígíí*:

(24') ?Ashkii ha'átíí-lá nayiisnii'-éé-yígíí yiniłtsá?

The interpretation associated with (24') is one according to which the relative clause containing the question is 'pied-piped' (cf. Nishigauchi 1984 and Choe 1987 for discussion). That is to say, the entire complex NP is extracted, not just the question word contained in it. The question asks *which boy?*, restricting the range of possible answers to *boys who have bought something* -- thus, the meaning of the questioned complex nominal expression is roughly *the boy who bought what*, and it functions as a single unit for the purposes of extraction in LF. Accordingly, the answer to (24') must be something like *ashkii atk'éstdisí nayiisnii'-éé* 'the boy who bought candy': the question cannot be answered merely *atk'éstdisí* 'candy', or the like. This use of (24') does not counterexemplify (23), since the extraction, with pied-piping, does not cross the adjunction configuration.

We do not as yet understand why the 'double determiner' is required in order for (24) (i.e. (24')) to receive the pied-piped interpretation, particularly in view of the fact that the same does not seem to be required in the case of the focus construction, judging from the following example cited by Schaubert (1979):

- (25) *tʃi' hanii nabííłgo'-éę ashkii shik'ihodíí'á.*
 (horse NEGFOC threw-REL boy blamed:me)
 'It's not the boy that the HORSE threw who blamed
 me.' (Schauber 1979:271)

Here, the externally headed variant of the relative clause is used, and that may well have something to do with the matter. In any event (25), like (24'), is consistent with the claim embodied in (23), since the interpretation indicates clearly that pied-piping is involved -- it is the entire complex nominal expression which is negated in (25), not merely the focussed constituent internal to the relative clause (cf. Perkins 1978 for detailed discussion of negative focus). Assuming, then, that pied-piping is involved in these cases, the LF representations are roughly as follows:

- (26) [XP [XP ... *t*1 ...] [YP [YP ... *t*2 ... -REL] NP]]

In this configuration, *t*1 is the trace of the moved category YP (extracted and adjoined to XP), and *t*2 is the trace of NP (the LF or syntactic head of the relative clause construction). In neither of these cases of movement is (23) violated.

4. Some final observations

Our purpose is simply to indicate avenues along which investigations might proceed in the study of those aspects of Navajo grammar which evidently involve movement in LF. At this point, we have done no more than assemble a small sample of relevant data, drawn for the most part from works already published, with a view to preparing for a more detailed and wide-ranging study of the grammar of LF in Navajo, a study which must not only examine thoroughly the constructions listed above but also the grammar of quantification, an area not mentioned at all in this brief essay.

Under the assumption that the configuration depicted in (23) is relevant to the issues we have discussed, one of the most urgent tasks ahead is the explanation of that fact. At this point, (23) is nothing more than a descriptive comment. If the adjunction configuration is a barrier to LF extraction, exactly *why* is it a barrier? This question is particularly pertinent in view of the fact that, in the most carefully elaborated theory of barriers (Chomsky 1985), an adjoined category is, technically, neither *excluded* nor *dominated* by the category to which it is adjoined. Moreover, if adjunction creates a barrier, what is it a barrier to? Is the ill-formedness of double extraction due to subjacency? Or is it related to government (cf. Saito 1985)?

In attempting to answer these questions, we will have to determine whether double extractions are ill-formed for the same reasons as are certain single extractions which, in some sense yet to be determined, cross a barrier. For example, the ill-formedness of (27) and the necessity of pied-piping in (28-29) indicate that extraction from an adjunct clause is not possible:

- (27) *[[Ashkii yah'ííyáa-go] hadeeshghaazh-éé sitsilí át'é.
 ([[boy entered-COMP] I:shouted:out-REL
 my:younger:brother is)
 *'The *boy* that I shouted when *t* came in is my
 younger brother.'

- (28) Q Ni-zhé'é háágóó-lá ííyáa-go nicha.
 (your-father whither-PRT he:went-COMP you:cry)
 'You are crying because your father went where?'
 A: Kintání-góó ííyáa-go yishcha
 (Flagstaff-to he:went-COMP I:cry)
 'I am crying because he went to Flagstaff.'
 (Schauber 1979:273-274)

- (29) Jáan hanii chidí yiyííłchọ'-go t'áani' naashá.
 (John NEGFOC car wrecked-COMP on:foot I:walk)
 a) 'It's not because John wrecked the car that I'm on
 foot.'
 b) 'It's not because JOHN wrecked the car that I'm
 on foot.'
 (Perkins 1978:25-26)

The tags appropriate to the negative focus construction illustrated by (29) are consistent with the interpretation according to which the entire subordinate clause assumes the adjoined position in relation to the matrix in LF (and this is the position defended in greater detail in Perkins 1978) -- though, interestingly, while the *negation* component of the focus marker in (29) clearly applies to the subordinate clause as a whole, the *contrastive* component may, as it does in the (b') translation (cf. tag (29'b)), apply to the constituent to which the marker is attached:

- (29') Tag for (a): ... ɬahgo áhóót'íid-go ga' t'áani' naashá.
 'I'm on foot because something else happened.'
 Tag for (b): ... Mary ga' chidí yiyííłchọ'-go t'áani'
 naashá.
 'I'm on foot because MARY wrecked the car.'

Finally, of course, there is a deeper question. We must determine precisely the nature of the structure involved in defining the ill-formedness of the forbidden extractions. We must ask whether the adjunction configuration is relevant at all. It may well be that the landing site for LF extraction is not in fact the adjunction position but, rather, a specifier position defined by the Navajo theory of lexical projections -- i.e. the Navajo instantiation of X-bar theory -- and that the ill-formedness of apparent multiple extractions is simply due to the fact, if it is true, that the specifier represents a single position. In any event, much remains to be done in order to

achieve an adequate understanding of the grammar of LF in Navajo.

Notes

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The *bi*-Construction and Pronominal Arguments in Apachean¹

Merton Sandoval, Eloise Jelinek

O. Introduction

A conspicuous feature of Apachean syntax is the alternation between the *yi*- and *bi*- verbal prefixes that appears in sentences with all third person arguments, as in the following examples from Navajo:

- (1) ʔiʔ dzaaneez yiztaʔ
horse mule *yi*-kicked
'The horse kicked the mule.'
- (2) ʔiʔ dzaaneez biztaʔ
horse mule *bi*-kicked
'The horse got kicked by the mule.'

The *bi*- construction has been termed 'passive' or 'passive-like' because of the contrast in the interpretation of sentences with *yi*-/ *bi*-, as the gloss for (2) is intended to suggest. Previous writers on this topic have described the *bi*- prefix as marking a change in the grammatical relations of the nominals in the sentence, resulting in a "Subject-Object" inversion.

- (3) Subject Object *yi*-verb
Object Subject *bi*-verb

Perkins, in her 1978 dissertation, extended the analysis so as to include sentences with indirect objects, and claimed that the

grammatical relations of nominals are altered as follows in the ditransitive *bi*-construction.

- (4) Subject Indirect Object Object *yi*-Verb
 Indirect Object Subject Object *bi*-Verb

The *yi*-/bi- alternation plays a crucial role in the interesting "NP hierarchy", as described by Hale (1973), Creamer (1974) and Witherspoon (1977). Apachean nominals are ranked according to animacy/ volition/ cognitive ability, so that a sentence such as

- (5) ?? $\text{t}\text{h}\text{a}\text{s}\text{t}\text{i}\text{i}\text{n}$ $\text{y}\text{i}\text{z}\text{t}\text{a}\text{t}$
 horse man *yi*-kicked
 ?? 'The horse kicked the man.'

is culturally "odd" and not employed, since it carries the implication that the horse has more volition and intelligence than the man. If the horse is understood as a supernatural being, with greater than human powers, then the sentence is acceptable; this fact demonstrates that the sentence is not ungrammatical, but pragmatically unacceptable. (See discussion in Hale, et al., 1977.) To describe a state of affairs in which a man gets kicked by an ordinary horse, the *bi*-construction is employed.

- (6) $\text{h}\text{a}\text{s}\text{t}\text{i}\text{i}\text{n}$ $\text{t}\text{h}\text{a}\text{s}\text{t}\text{i}\text{i}\text{n}$ $\text{b}\text{i}\text{z}\text{t}\text{a}\text{t}$
 man horse *bi*-kicked
 'The man got kicked by the horse.'

It should be emphasized here that the *yi*-/bi- contrast is present only in sentences with all third person arguments, and that a sentence such as

- (7) $\text{ʔi}^{\text{h}} \text{shizta}^{\text{h}}$
 horse me-kicked
 'The horse kicked me.'

is perfectly acceptable. In other words, first and second person do not participate in the animacy hierarchy. Our focus in this paper will not be the animacy hierarchy, which reflects pragmatic factors, but the syntax of the *bi*-construction itself, and the rules of interpretation that apply, as shown by the contrasting glosses in sentences 1) and 2).

Chomsky (1981, pp. 120-121) addresses the question of whether the Navajo *bi*-construction should be termed a passive:

'The question makes sense if 'passive' is a natural class, though it is unclear what the answer should be. The question does not arise if we simply assume that languages have various ways to avoid focusing the "logical subject" or to avoid expressing one at all, while still observing the syntactic requirement that a subject NP be present ... In short, it is not obvious that the notion 'passive' refers to a unitary phenomenon, still less one than can serve as a foundation stone or even guiding intuition for a theory of syntax. It may be a useful descriptive category, and one can imagine functional explanations for the prevalence of some such device. But the range of phenomena that fall within this category in some sense appear to be rather heterogeneous in character.'

We will develop here an analysis of the *bi*-construction that differs fundamentally from those previously proposed. It is clear that the Apachean *bi*-construction is a member of the class of structures that, across languages, are employed to avoid focusing the "logical subject" (the agent, in a transitive sentence), as Chomsky notes in the passage cited. However, we take exception here to Chomsky's implicit assumption that there is in universal grammar a "syntactic requirement that a

subject NP be present" (emphasis ours). Such an assumption underlies the Extended Projection Principle (Chomsky 1982).

- (8 a) The θ -marking properties of each lexical item must be represented categorially at each syntactic level.
 b) Every clause must have a subject.

The term "categorial" in (8a) refers to a syntactic category, and means that unless there is a free lexical item (NP) to fill a clausal argument position, an Empty Category (PRO, pro, trace) is postulated in the Government and Binding framework.

Compare the following Navajo sentences with their English glosses:

- | | |
|---------------------|-----------------------|
| (9 a) <i>yiztał</i> | b) <i>biztał</i> |
| <i>yi-kicked</i> | <i>bi-kicked</i> |
| He kicked him. | He got kicked by him. |

The translations given (9) show that English is a Lexical Argument language, where independent lexical items (NPs) serve as the clausal arguments. In contrast, in the Navajo sentences in (9), all arguments are realized in the verbal morphology; Navajo is a Pronominal Argument language. The inflected verb alone can serve as a complete sentence. Our reasons for not viewing the pronominal inflection as "agreement" will be given in Section 1 below. Nominals in these languages are optional adjuncts; there is no requirement for the "categorial" representation of the subject, no VP node, and no government of lexical objects.² (See Jelinek 1985, for a discussion of this typological parameter).

Our proposal is that in Apachean, NPs are never required subject and object constituents, since nominals in themselves cannot serve as verbal arguments.³ The person-marking prefixes that appear in the Apachean inflectional morphology are the clausal arguments, and satisfy the universal requirement that all arguments be realized at the level of phrase

structure if the clause is to be grammatical. Since Apachean nominals are only adjuncts, they have no grammatical relations independently of the pronominal element they are in adjunction to. We assume; on the basis of the interpretation of sentences, that the pronominal argument and any nominal that may be an adjunct to it form a complex constituent with the pronominal as head (comparable to a relative clause and its head), at the level of logical form or semantic structure. The pronominals have case and θ -roles, as reflected in their relative order (Indirect Object - Object - Subject - Verb; see Kari 1976 and Young and Morgan 1980). If the person marking prefixes are recognized as arguments, rather than agreement markers, then the Projection Principle can be seen to apply to Apachean. However, since the pronominal prefixes are always present, in contrast to the optional adjuncts, there are no clause types in Navajo and Apache with "missing" arguments, and no empty categories need be invoked in their analysis. Questions regarding the morphology/syntax boundary in universal grammar need to be resolved here.

The analysis of the *bi*-construction given here will incorporate the following:

- a) The definition of the syntactic functions of nominals in Apachean as ad-argumental adjuncts, not as independent arguments (subjects and objects).
- b) Specification of the coindexing rules that account for differences in the coreference of pronominal arguments and nominal adjuncts in the *yi*- vs. *bi*- constructions.
- c) Evidence that the *yi*-/*bi*- alternation involves a change in the grammatical relations of the pronominal prefixes, such that a pronominal argument with the θ -role of Patient or Goal has the grammatical relation of SUBJECT in the *bi*-construction.
- d) Identification of the *bi*-construction as a transitive, inverse construction, and therefore not a passive. Here we follow the analysis presented by Willie (this volume).

We will also show the role of the *yi-/bi-* contrast in comparative and relational sentences, two interesting sentence types in Apachean described in Sandoval (1984) in connection with the syntactic functions of the *bi*-construction.

Preceding examples have been drawn from the literature on the *bi*-construction, and are in Navajo. Example sentences in the ensuing sections are in closely related Jicarilla Apache, the first language of the first author, Sandoval, with the exception of a few examples that are specifically identified as Navajo.

1. Person-marking prefixes as verbal arguments in Apachean

The elaborate inflectional morphology of the Athabaskan verb has been extensively documented; however, there are few exhaustive analyses of the complex phonological processes of fusion and incorporation that occur. Hoijer (1945), Hale (1972), Kari (1976) and Young and Morgan (1980) have made remarkable contributions of this kind in the analysis of Apachean. Our goal here is only to point out that there is general agreement that the Apachean verb is inflected so as to show a) the person and number of the subject of intransitive verbs, as in

(10) na'ishkòh
lsS-swim
'I am swimming.'

(11) nada'ìtkòh
3plS-swim
'They are swimming.'

and b) the person and number of the subject and object of transitive verbs, as in

(12) hish'ì
3sO-lsS-see
'I see him/her/it.'

(13) daanahaa'ì
1plO-3plS-see
'They see us.'

In examples (10-13), the inflected verb serves as a complete sentence, a complete predicate/argument structure. In Apachean sentences of this kind, a nominal is added to the sentence only when additional predication material is needed to aid in reference.

- | | |
|--|---|
| (14) <i>ch'ekéé na'íłkòh</i>
girl(s) 3sS-swim
'The girl is swimming.' ⁴ | (15) <i>ch'ekéé daahish'í</i>
girl(s) 3plO-1sS-see
'I see the girls.' |
|--|---|

A contrast between singular, dual, and plural pronominal subjects is present except in the third person. Where both subject and object are third person, plural number may be marked only once.

- | | |
|-------------------------------------|--|
| (16) <i>yaa'í</i>
'He sees him.' | (17) <i>daayaa'í</i>
'He sees them';
'They see him'; or,
'They see them.' |
|-------------------------------------|--|

Example (17) is multiply ambiguous with respect to number, but both arguments are specified as third person. For details see Sandoval (1984).

The syntax of double object constructions (ditransitives) is more complex. The indirect object or goal argument is most often a pronominal prefix on a postposition, as in

- (18) *maa né'á*
 3-to 1sS-gave [3sO]
 'I gave it to him.'

In (18), the postpositional phrase *maa* has a prefix *m(i)-* (*bi-*) that marks a third person pronominal goal argument.⁵ The verb *-'á* "to give a single, round solid object" has an incorporated (3s) theme argument. In third person ditransitive

forms, the inflected postposition and verb are often a single phonological unit ("word").

- (19) yadeinín'á
 3-to-3plS-gave[3sO]
 'They gave it to him.'

We turn now to a survey of the evidence that nominals are adjuncts and not verbal arguments in Apachean. The examples given earlier have shown that the inflected verb (or verb-postpositional complex) is accepted as a complete sentence. Now we want to argue against an analysis involving multiple "pro-drop" or instances of other empty categories.

In Apachean, as in the so-called "pro-drop" languages, there are independent pronouns as well as the person-marking pronominal inflections. But it is significant that these independent pronouns occur only with a special function, that of referential contrast. Compare:

- | | |
|--|---|
| <p>(20) níísh'í
 2sO-1sS-see
 'I see you.'</p> | <p>(21) shí níísh'í
 I 2sO-1sS-see
 'I'm the one that sees you' or
 'I myself see you.'</p> |
| <p>(22) di níísh'í
 you 2sO-1sS-see
 'I see <i>you</i>' or 'You're the one I see.'</p> | |

Sentences with independent pronouns are marked constructions in Apachean, with contrastive emphasis on an argument. Therefore, sentences with two independent pronouns are odd or questionable:

- (23) ??shi di níísh'í 'I see *you*.'

Furthermore, because of this specialized use of the independent pronouns in referential contrast, there are certain verbs that exclude pronominal adjuncts:

- | | | | |
|--------|---|----|--|
| (24 a) | naagołkji
3sS-rain
It's raining.' | b) | *'éí naagołkji
that one 3sS-rain |
|--------|---|----|--|

Another example of a stative verb that excludes an independent pronoun is:

- | | | |
|--------|----------|--|
| (25 a) | 'íí's'ah | 'It's late (a long time has passed).' |
| b) | 'is'ah | 'It will be long (a long time will pass).' |

There are no pleonastic subjects in Apachean, since there is no syntactic requirement for an NP subject. And since referential contrast is impossible with impersonal verbs of the kind exemplified in (24-25), independent pronouns do not occur. These facts about the distribution of independent pronouns suggest that the person-marking verbal inflection is not "agreement".

Nominals in Apachean (including independent pronouns) are never case-marked; this is consistent with their non-argumental status. Pronominal prefixes on the other hand are always attached either to the verb or postposition that assigns case. Neither postpositions nor verbs ever occur without pronominal inflection, and the order of the prefixes in the postposition-verb complex reflects case. Accusative case precedes Nominative case (Examples 12-17) except where the object argument is expressed in a semantic feature of the verb, and order is not relevant (Examples 18,19). In these examples, Dative or Oblique case is assigned by postpositions that precede the verbal prefixes.

With rare exceptions, the Apachean nominal does not show number distinctions.⁶ In Jicarilla Apache, there appears to be only one nominal that marks plural number:

- (26) tsɨ́łkée 'teen-aged boys or young men'

Thus "agreement" in number, or "government" in terms of case assignment, does not appear to be relevant to the relation between verbs and nouns in Apachean, and nominal adjunction seems to be a plausible account of the relation.⁷ We have seen also that there are restrictions on the occurrence of independent pronouns that are not consistent with their being argumental in function. In sum, pronominal prefixes are always present in accordance with the subcategorization of the verb (with the sole exception of object incorporation (as shown in Examples 18, 19). In contrast, lexical NPs are optional and infrequent additions to the sentence. The structure we propose for Apachean sentences with nominals is as follows:

- (27) S --> (Nom) S

We do not label the structure including the adjoined nominal S', since the nominal is not in COMP, nor is it a topic. There are topic-like constructions in Jicarilla:

- (28) ch'ekée'í nada'íłkqh
 girl-DET / 3plS-swim
 'The girls, they are swimming.'

- (29) ch'ekée'aa nada'íłkqh
 girl-about / 3plS-swim
 'As for the girls, they are swimming.'

Optional pauses may appear after any nominal; in the topic-like constructions shown in (28, 29) the pauses are longer.

In Sandoval's work with text analysis, it has become clear that nominals are added only when clarification is necessary, or when new referents are introduced. The following is from a recording of a narrative told by Mrs. Margarita Sandoval (Sandoval 1983, p.1):

Gaat'ígo nahá 'anlé náą́łni daayiiłni
When it is light for us you make possibly they said to him

ná
that's how it is told

Doo____da daabiiłni ná
No-o-o-o he told them that's how it is told

dooda daabiiłninda daayókaą́hgo yanaada'íłt'éígo
no even though he when they were when they repeat-
told them begging him edly supplicated him

díí'ííshdi silígo
four times when it became

'aoo biiłni ná
yes he said to them that's how it is told

An analysis in terms of optional nominal adjunction and a recognition of the non-argumental status of nominals will make it possible to give a clear and straightforward account of how the *yi-/bi-* alternation functions in Apachean. On this analysis, we will not need to postulate PRO, pro or other empty categories, in contrast to earlier treatments of the *yi-/bi-* constructions in Navajo.

In the next section we will see how particular verb types permit different sets of nominal adjuncts.

2. Subcategorization of the verb

Jicarilla Apache verbs may be classified as follows:

(30) 1. Intransitive (1 argument)

Yááłkíh V₁
 3sS-spoke
 'He spoke.'
 X

2. Transitive (2 arguments)

a) Yíłtsá V₂
 3sO-3sS-saw
 'He saw him.'
 X Y

b) Yich'í yááłkíh V'₂ (V₁ + PP)
 3-to 3sS-spoke
 'He spoke to him.'
 X Y

3. Ditransitive (3 arguments)

a) Sheidinntsi V₃
 1s1O-3sO-3sS poked
 'He poked it at me.'
 X Y Z

- b) Yá 'ayijlaa V'₃ (V₂ + PP)
 3-for 3sO-3sS-made
 'He made it for him.'
 X Y Z
- c) Yá yich'í yáatkíh V''₃ (V₁ + PP + PP)
 3-for 3-to 3sS-spoke
 'He spoke to him for him.'
 X Y Z

V' = V + Postposition; V'' = V + 2 Postpositions

The number of adjuncts permitted depends on the verb type, as shown in the subscript. We will now give examples showing how nominal adjuncts can appear with each verb

2.1 Intransitive Verbs

Stative verbs and other intransitive verbs have only one argument, and therefore permit only one nominal adjunct. The following example shows an intransitive verb with one nominal adjunct:

- (31) Ch'ekée na'íkóh
 girl 3sS-swim
 Adjunct Sentence
 'The girl swims' or 'The girl is swimming.'

In this example, the single nominal is co-referential with the single verbal argument.

2.2 Transitive verbs

2.2.1. There are two kinds of transitive verbs: simple and complex. Examples of simple transitive verbs given earlier (12 and 20) are repeated here:

- | | | | |
|------|--|------|---------------------------------------|
| (12) | hish'í
3sO-1sS-see
'I see him/her/it.' | (20) | nísh'í
2sO-1sS-see
'I see you.' |
|------|--|------|---------------------------------------|

The following example shows a simple transitive verb with two third person arguments, where the speaker has exercised his option of adding nominals to both pronominal arguments:

- (32) 'ishkiyíí ch'ekéé yaa'í
 boy girl 3sO-3sS-sees
 'The boy sees the girl.'

Word order is significant in Apachean. In sentence (32), the first NP is coindexed with the subject verbal argument, while the second NP is coindexed with the object verbal argument. The following example shows a different word order.

- (33) Ch'ekéé 'ishkiyíí yaa'í
 girl boy 3sO-3sS-sees
 'The girl sees the boy.'

Examples (32) and (33) show that the order of the nominal adjuncts is significant, as reflected in their coreferentiality with the pronominal verbal arguments.

In the introductory section above, we noted that the *yi-/bi-* alternation appears only in sentences with all third person arguments, and involves a change to a "passive-like" interpretation of the sentence. Example (34) below is the Jicarilla equivalent of the Navajo sentence in (9) above (Navajo *t* corresponds to Apache *k*).

- (34) a) *yizkał*
 yi-kicked
 'He kicked him.'
- b) *bizkał*
 bi-kicked
 'He got kicked by him.'

We postpone discussion of the analysis of the *bi-* (*mi-*) prefix until we have provided data on its distribution. The *bi*-prefix involves a change in the coindexing of nominal adjuncts. Compare (32) and (33) above with the following:

- (35) a) 'ishkiyijj ch'ekée maa'ij
 boy girl bi-sees
 'The boy is seen by the girl.'
 b) Ch'ekée 'ishkiyijj maa'ij
 girl boy bi-sees
 'The girl is seen by the boy.'

Example (35a) corresponds to (32) with a change from *yi-* to *bi-*. Example (35b) corresponds to (33) with the same change. It is evident that the coindexing of the pronominal inflection and the nominal adjuncts has been reversed. Since 'boy' and 'girl' are of equal rank in the NP hierarchy, either the *yi-* or *bi-* construction is acceptable in these examples.

Note that despite the passive (the best available) translations given for (35a,b), these constructions are transitive. They permit two nominal adjuncts, whereas intransitive sentences in Apachean permit only one adjunct.⁸ In the English passive construction, the argument with the thematic role of *patient* is the Subject of the sentence, and the argument with the thematic role of *agent* is oblique, introduced by the preposition *by*, as in the translations given in (35). In the Apachean sentences, neither nominal is marked oblique, but there has been a change in the focus of the sentence, as happened in (34a,b) above, where no nominal adjuncts were present. This change in focus suggests that in the *bi-* construction, as in the English passive, the argument with the thematic role of *patient* becomes the Subject of the sentence.

2.2.2 We define a *complex* transitive verb as consisting of an intransitive verb and an adjoined postpositional phrase. An example of a complex transitive verb is the following:

- (36) 'ishkiyíí ch'ekéé yich'í yáátkíh
 boy girl 3-to 3sS-spoke
 'The boy "spoke to" the girl.' (advised or reprimanded her)

Without the postpositional phrase *yich'í*, the verb *yáátkíh* is intransitive and permits only one nominal adjunct. We classify *yich'í yáátkíh* as a complex transitive verb, rather than an intransitive verb with an oblique or indirect object, since it behaves just like other transitive verbs with the *yi-/bi-* alternation. Compare:

- (37) 'ishkiyíí ch'ekéé maa'í
 boy girl *bi*-sees
 'The boy is seen by the girl.'
- (38) 'ishkiyíí ch'ekéé bich'í yáátkíh
 boy girl *bi*-POST 3sS-spoke
 'The boy was "spoken to" by the girl.'

We propose that only *transitive* constructions permit the *yi-/bi-* alternation and that all postposition + verb constructions (V' or V") are transitive. Compare also:

- 39) Bill Sam yá'inítkòh
 3-(*yi*)-POST-3S-swam
 'Bill swam to Sam.'

- (40) Bill Sam má'inłkóh
 3-(*bi*)-POST-3S-swam
 'Bill was "swam to" by Sam.'

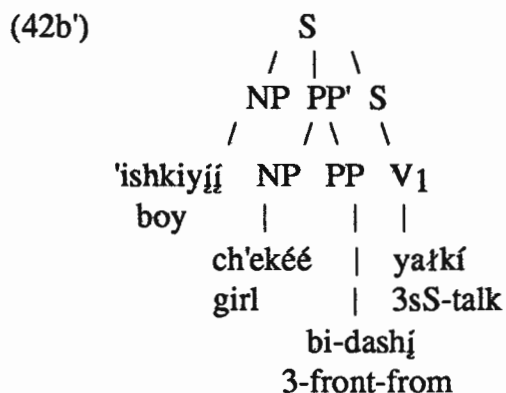
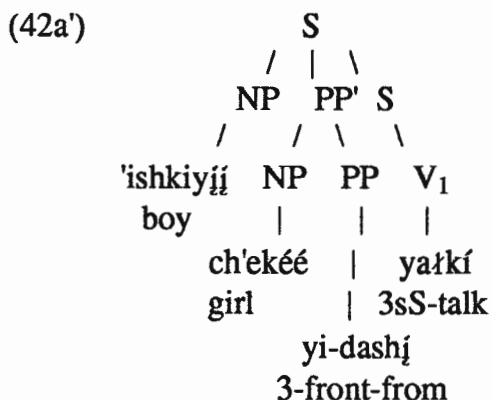
The awkward English translation given for (40) is intended to show that the (postpositional) argument with the thematic role of *goal* is in focus or given prominence in this *bi*-construction. It is thus roughly comparable to English sentences like

- (41) a) Bill was run over by Sam.
 b) Bill was made fun of by Sam.

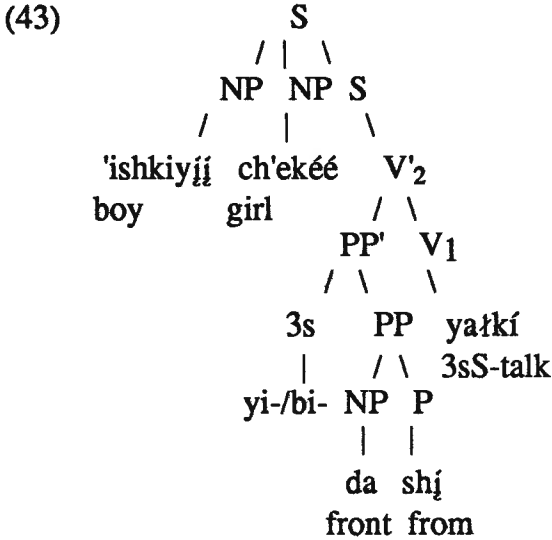
and other passive constructions that are related to transitive sentences with a verb + preposition. Examples (36-40) show that complex transitive verbs (V + postposition = V') in Jicarilla permit two nominal adjuncts, just as simple transitive verbs do. In these examples, the nominals are adjuncts to the sentence, not under a PP node, as would be the case if the construction were intransitive. Proof that this is the case may be drawn from the fact that problems of constituency arise if we assume that a nominal is under a PP node. Compare the following:

- (42) a) 'ishkiyíí ch'ekéé yidashí yałkí
 boy girl 3-front-from 3sS-talk
 'The boy is talking back to the girl.'
 b) 'ishkiyíí chekéé bidashí yałkí
 boy girl
 'The girl is talking back to the boy.'

Suppose we assume the following structures for these examples:



In (42a') the NP 'girl' and the postpositional phrase are dominated by the node PP'. By analogy, in (42b') the *bi*-construction (glossed 'The girl is talking back to the boy'), the NP 'boy' should be in the same constituent as the postpositional phrase -- but these elements are not adjacent. The postpositional phrase literally means 'in front of 3', and in (42b'), it is the girl who is talking 'in front of' the boy. Therefore, we propose the structure shown in (43):



the boy 'talks back' to girl *yi-/*
 the girl 'talks back' to boy *bi-*

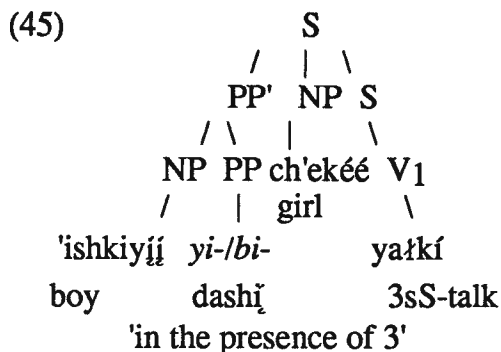
We analyze the *V'* as a complex verb comparable to the English expression 'talk back to'. The postposition and verb, together, form a complex transitive verb, a single constituent, and the *yi-/bi-* alternation functions with these complex verbs just as it does with simple transitive verbs. In the structure shown in (43), neither NP is under the PP node, and either one may be coindexed with the subject verbal argument, according to the *yi-/bi-* alternation.

In these examples, the complex verb *yi-/bi- dashí yałkí* was illustrated. If the postpositional phrase is not adjacent to the verb, the construction is no longer a complex verb, but a verb plus a locative postpositional phrase; then the meaning is different and the *yi-/bi-* contrast serves a totally different function, in an *intransitive* sentence:

- (44 a) 'ishkiyíí yidashí ch'ekéé yałkí
 boy 'in the presence of' girl 3sS-talk
 'The girl is talking in the presence of the boy.'

- b) 'ishkiyíí bidashí ch'ekée yałkí
 boy 'in the presence of' girl 3sS-talk
 'The girl is talking in the presence of the boy.' (a
 particular known boy)

For these sentences, the following structure is proposed:



Here the nominal 'ishkiyíí ('boy') is ("Chomsky") adjoined to the postpositional phrase yi-/bi-dashi, and there is no change in the coindexing of nominals associated with the yi-/bi-contrast. Instead, the contrast is 'in the presence of the boy' vs. 'in the presence of the *particular (known)* boy'. For further examples of this use of the yi-/bi-contrast, see Sandoval (1984). Perkins (1978) mentions similar contrasts in Navajo.

2.3 Ditransitive verbs

Ditransitive verbs have three arguments and therefore permit three nominal adjuncts. There are three subtypes: V_3 (no postpositions); V'_3 (a transitive verb plus one postposition); and V''_3 , (an intransitive verb plus two postpositions). All show the *yi-/bi-* alternation on the first element of the verbal complex (postposition or verb). The examples in (46) show a V_3 with all three possible nominal adjuncts present:

- (46) a) *didé 'ishkiyíí 'ítkí' yeidinntsi*
 man boy gun 3s10-3sO-3sS-poked
 'The man poked the gun at the boy.'
 b) *didé 'ishkiyíí 'ítkí' meidinntsi*
 man boy gun *bi*-poked
 'The man had the gun poked at him by the boy.'
 (not necessarily causative; 'The man was poked at...')

Note that in the *bi*-construction the verbal argument with the thematic-role of goal is in focus. The following examples illustrate a V'_3 :

- (47) a) *Bill Sam yá 'ayíílaa*
 3-for 3sO-3sS-made
 'Bill made it for Sam.'
 b) *Bill Sam má 'ayíílaa*
 3-for 3sO-3sS-made
 'Sam made it for Bill.' or
 'Bill had it made for him by Sam.'

We could add a third nominal such as *kíh* ('house') to (47a) to show what 'it' refers to:

- (49 a) Bill Sam yá yich'í yáaṭkḥ
 3-for 3-to 3sS-spoke
 'Bill spoke to Sam for X, or Bill spoke to X for Sam.'
- b) Bill Sam má yich'í yáaṭkḥ
 bi-for 3-to 3sS-spoke
 'Sam spoke to Bill for X, or Sam spoke to X for Bill.'

Sentences with a V''_3 and three nominal adjuncts are very difficult to process; there is too much ambiguity, for reasons to be explained below.

In this section, we have given a classification of verb types in Jicarilla, and presented the data on the occurrence of nominal adjuncts with each verb type, and on the distribution of the *bi*-prefix. In the next section we will state the coindexing rules that account for the coreference between verbal arguments and their adjuncts in the *yi*- and *bi*-constructions, and make it possible to assign particular interpretations to the sentences.

3. Coindexing rules and nominal adjunction

Our claim is that the *bi*-construction, like the English Passive, involves an argument that does not have the thematic role of *agent* (that is, a *patient*, *theme*, *goal*, etc.) but does have the grammatical relation of Subject. Therefore, we will need to consider both the thematic roles and grammatical relations of verbal arguments in this section, where we provide rules that account for the different interpretation of sentences with *yi*- vs. *bi*-. The rules are:

(50) Adjunction Rule

A verb permits (a maximum of) as many nominal adjuncts as it has arguments:

That is:

V₁ permits 1 NOM ADJT

V₂, V'₂ permit 2 NOM ADJT

V₃, V'₃, V''₃ permit 3 NOM ADJT

The Coindexing Rules for Jicarilla nominal adjuncts in simple (one clause) sentences are as follows:

(51) V₁ Coindexing Rule

Coindex the single NOM ADJT with the single verbal argument.

An example of a V₁ (intransitive) construction with a single nominal adjunct is:

(52) Ch'ekéé ndees

girl 3sS-tall

'The girl is tall.'

The optional nominal must be coindexed with the single verbal argument. This argument necessarily has the grammatical relation of Subject, and its thematic role is irrelevant. In (52), the pronominal argument is a *theme*; in (14) above (translated "the girl is swimming"), the verbal argument has the thematic role of *agent*. Other intransitive subjects may be *patients*, *experiencers*, etc.

When we consider transitive constructions, where the *yi-/bi-* alternation appears, the situation becomes more complex. In the *yi-* construction, an argument with the thematic role of *agent* is Subject; in the *bi-* construction, a *non-agent* argument is Subject, as shown in example (34) above, repeated here.

- | | | | |
|--------|---|----|--|
| (34 a) | yizkaʔ
yi-kicked
'He kicked him.' | b) | bizkaʔ
bi-kicked
'He got kicked by him.' |
|--------|---|----|--|

This contrast in the meaning of the sentences in (34) is associated with a change in the coindexing rules for *yi-* vs. *bi-* constructions.

Since nominal adjuncts are optional, a transitive verb may have two, one, or no adjuncts. Coindexing is as follows:

(53) 1. V_2 : Two NOM ADJT

a) *Yi*-construction

1. Coindex the first NOM ADJT with the pronominal prefix that has the θ -role *agent*.

2. Coindex the second NOM ADJT with the pronominal prefix that has the θ -role *patient*.

b) *Bi*-construction

Reverse coindexing of the pronominal prefixes and NOM ADJT

2. V_2 : One NOM ADJT

a) *Yi*-construction

Coindex the NOM ADJT with the pronominal prefix that has the θ -role *patient*.

b) *Bi*-construction

Coindex the NOM ADJT with the pronominal prefix that has the θ -role *agent*.

An example of a V_2 with one nominal adjunct is as follows:

- (54 a) ch'ekéé yaa'í
 girl 3sO-3sS-see
 'X sees the girl.'

- b) ch'ekéé maa'í
 girl *bi*-see
 'X is seen by the girl.'

Examples of a V_2 with two nominal adjuncts include (32) through (35) above; a V'_2 with two nominal adjuncts is illustrated in (36, 38, 39, 40, and 42) above. Recall that in V'_2 , the object of the postposition has the θ -role patient, in a transitive construction. This is in contrast to examples (44a, b), intransitive constructions with a V_1 and a postpositional phrase, where the *yi-/bi-* contrast has a different function.

We turn now to the ditransitive constructions. The simplest case is the V_3 , with no postpositional phrases. With all the ditransitive constructions, ambiguities arise. We will begin with the constructions where all three possible adjuncts are present.

(55) V_3 : Three NOM ADJT

a) *Yi*-construction

1. Coindex the first NOM ADJT with the pronominal prefix with the θ -role *agent*.
2. Coindex the second NOM ADJT with the pronominal prefix with the θ -role *goal*.
3. Coindex the third NOM ADJT with the pronominal prefix with the θ -role *theme*.

b) *Bi*-construction

Reverse coindexing of (1) and (2); coindexing in (3) remains unchanged.

Examples (46a, b) above show a V_3 with three NOM ADJT.

When only two NOM ADJT to a V_3 are present, ambiguities arise, and pragmatic considerations are relevant to the interpretation.

- (56) a) *didé 'iɬkɨ'* yeidinntsi
 man gun 3s10-3sO-3sS-poked
 'X poked the gun at the man.'
- b) *didé 'iɬkɨ'* meidinntsi
 man gun *bi*-poked
 'The man poked the gun at X.'

Since guns are aimed at things and people are not, the ADJT '*iɬkɨ*' is interpreted as an ADJT to the theme argument. If both NOM ADJT referred to human beings, the theme argument would be interpreted as having no ADJT, and the *yi-/bi*-alternation would result in the same change in interpretation of adjuncts to the agent and patient arguments that is shown in (46a, b).

When a single ADJT to a V_3 is present, similar pragmatic factors play a role.

- (57) a) '*iɬkɨ*' yeidinntsi
 gun 3s10-3sO-3sS-pokeed
 'X poked the gun at Y.'
- b) '*iɬkɨ*' meidinntsi
 gun *bi*-poked
 'Y had the gun poked at him by X.'
- (58) a) *didé* yeidinntsi
 man 3s10-3sO-3sS-poked
 'X poked it at the man.'
- b) *didé* meidinntsi
 man *bi*-poked
 'The man poked it at X.'

Examples of a V_3 construction with three nominal adjuncts are as follows:

- (59) John Henry dibé yeinnɬkɨ
sheep 3-to-3sS-gave[3sO]
'John gave Henry a sheep.'
- (60) John Henry dibé meinnɬkɨ
sheep *bi*-gave[3sO]
'John was given a sheep by Henry.'

The verb in examples (59, 60) refers to giving an animate object. With the V₃, as with the V₃, ambiguities arise when less than three nominal adjuncts are present. Again, pragmatic factors are relevant to the interpretations. If examples (59, 60) had only one proper name and the NP *dibé*, the proper name could be interpreted as coreferential with either the agent or the goal, in either the *yi-* or the *bi-* construction. For pragmatic reasons, *dibé* would be interpreted as coindexed with the theme argument. If the only ADJT present is a proper name, the same ambiguity is present, and the theme argument is interpreted as having no adjunct. If only *dibé* is adjoined, the agent and goal arguments are interpreted as without adjuncts, again for pragmatic reasons. All these ambiguities follow from the fact that the V₃ is a complete sentence, meaning '3 gave 3 to 3' and the NOM ADJT have no case marking. If all three of the permitted adjuncts are present, there is no ambiguity, as shown by the coindexing rules. If only one or two ADJT are present, ambiguities are unavoidable, since any ADJT to the theme argument intervenes between any other possible ADJT and the inflected verb. Thus, it is not the case that a NOM ADJT immediately preceding the verb is coindexed with either the agent or the patient argument according to the *yi-/bi-* alternation, as we have seen with a V₂, when only two arguments are present. These ambiguities are resolved in context.

Now we can explain why a sentence with a V''_3 ($V_1 + PP + PP$) has so many ambiguities with respect to coindexing the optional adjuncts. These sentences have two arguments with the θ -role goal.

- (61) Yá yich'í yáątkíh
 3-for 3-to 3-sSpoke
 'X spoke to Y for Z.'

This sentence has two postpositional arguments, and there is no fixed order of the NOM ADJT that may be coindexed with these arguments. Note that these ambiguities lend support to the claim that nominals are not verbal arguments, but adjuncts to them. There is no ambiguity with respect to the pronominal arguments themselves, and sentences with so many nominal adjuncts are rare or non-occurring in actual usage.

The coindexing rules given in this section have been stated in terms of the thematic roles of the verbal arguments. Let us consider now the question of the grammatical relations of these arguments. We saw that for intransitives, as in (52) above, the situation could not be simpler: the single argument of the verb is necessarily the Subject, no matter what θ -role is assigned to this argument by the verb.

With transitive verbs, the situation is more complicated. Consider again the contrast seen in (34) above:

- (34) a) yizkał 'He kicked him.'
 b) bizkał 'He got kicked by him. (approximately)'

The verb 'kick' assigns two θ -roles, *agent* and *patient*. In the *yi*- construction, as in the English translation, the *agent* is the Subject and the *patient* is the Object; this is the link between θ -role and grammatical relation that is always present in transitive sentences in English. The translation given for the *bi*- construction is meant to suggest that, like the English

Passive, the *bi*- form puts the *patient* argument into the Subject grammatical relation. Unlike the English Passive, the *bi*- form is a transitive construction, with a second direct argument, as shown by the fact that it can take two nominal adjuncts, like any other transitive. This second direct argument cannot have the grammatical relation of Object; it is a transitive *agent* with a non-subject grammatical relation.

Further support for the claim that in the *bi*- construction, the argument with the θ -role of *patient/theme* has the grammatical relation of Subject can be drawn from a consideration of how these sentences are used. In the Navajo examples (5,6) above, we saw that in accordance with the NP hierarchy, the *bi*- construction is employed when the *patient* argument is higher on the animacy scale than the *agent* argument.

- | | |
|---|--|
| (5) ?? $\lambda\lambda\lambda'$ hastiin yizta λ
horse man yi-kicked
'??The horse kicked the man.' | (6) hastiin $\lambda\lambda\lambda'$ bizta λ
man horse <i>bi</i> -kicked
'The man got kicked by
the horse.' |
|---|--|

The *yi*- form is fine when the agent is higher on the animacy scale:

- (62) hastiin $\lambda\lambda\lambda'$ yizta λ
 man horse yi-kicked
 'The man kicked the horse.' (Navajo)

We can say that the animacy hierarchy requires that the argument higher on the scale must be the Subject of the sentence, no matter what its θ -role, *agent* or *patient*, may be. There is no "Subject-Object" inversion; there is θ -role inversion. The generalization is that the first nominal adjunct is to be coindexed with the Subject argument, and the second adjunct is to be coindexed with the *other* (non-subject) argument, regardless of their θ -roles. With ditransitives, the

Subject argument has the θ -role *goal* in the *bi*-construction, as shown in (60) above.

Recall that the typical Apachean sentence has at most one adjunct; this means that *most* sentences have no subject adjunct. This is in accord with the fact that subjects are typically discourse topics and represent old information, whereas other arguments provide new information. Adjuncts are used when the speaker has reason to believe that the hearer may not be sure who or what he is referring to.

It was mentioned above that the *yi-/bi-* contrast occurs only when all the arguments are third person. In most of the examples given here, we have picked arguments where the nominals adjoined are of equal rank ('boy' vs. 'girl', 'Sam' vs. 'Bill', etc.) so that both the *yi-* and *bi-* constructions are culturally acceptable. But as we have seen, the *yi-* vs. *bi-* constructions do not mean exactly the same, because of the change in the θ -role assigned to the Subject. Compare:

(63) ((X) Y) *yizkał*

(64) ((Y) X) *bizkał*

Sentences (63) and (64) have the same truth conditions -- the same event happened in the world -- but their *use* is different, because of the change in the θ -role of the Subject. The *bi*-construction seems "fancy", or needlessly indirect, when both referents of the pronominal arguments are of the same rank, and the *bi*-construction is not obligatory.

The *bi*-construction is the *marked* one. A situation in which it seems natural to use the *bi*-construction would be as follows: Suppose X killed Y. To the question 'What did X do?' an appropriate answer would be:

(65) ((X) Y) *yi* - killed

However, if the question is: 'What happened to Y' a good reply would be:

(66) ((Y) X) *bi* - killed

Therefore, the passive is often the 'best available' translation in English. We turn now to the analysis of the *bi*-prefix.

4. The *bi*-prefix as an object pronoun and inverse marker

The *bi*-prefix occurs with nouns to mark third person possessive, as in

- | | | |
|-----|--------------------|-------------------|
| (67 | a) <i>bi-zhááʔ</i> | b) <i>bi-dibé</i> |
| | his money | his sheep |

And the *bi*-prefix can appear on postpositions to mark a third person postpositional object.

- | | | |
|-----|------------------|--------------|
| (68 | a) <i>bich'í</i> | b) <i>bá</i> |
| | to-3 | for-3 |

Our proposal concerning the contrast seen in (34)

- | | | |
|-----|------------------|-------------------|
| (34 | a) <i>yizkaʔ</i> | 3 kicked 3 |
| | b) <i>bizkaʔ</i> | 3 got kicked by 3 |

is that in (34a), there is a phonologically null (ZERO) third person object pronoun, and in (34b) there is an *overt* third person object pronoun, *bi*-, as seen in (67) and (68). The presence of this overt third person object pronoun is the marker of an *inverse* construction, as claimed by Willie (this volume). This means that the direction of the action is not the expected one; that the *Subject* of the transitive sentence is the

patient, not the agent. Therefore, the inverse construction can be used to state that the man (human) got kicked by the horse (a less rational being). These constraints on the use of the *yi-/bi-* alternation apply even when *no* nominals appear in the sentence. That is, an observer cannot describe an event where a horse kicks a man as (34a); it is necessary to say (34b). And a listener out of the line of sight would learn either a) that a less sentient being had kicked a being higher on the animacy scale (not the identity of the particular beings involved in the action described), or b) that the referent of the discourse topic had been kicked. The use of the overt object pronoun *bi-* signals that the Subject is a patient, and that the direction of the action is *upon*, not *from*, the transitive subject. This explains also why it is appropriate to reply with (34a) when asked "What did X do?", and with (34b) when asked "What happened to X?"

Since thematic roles are assigned according to the meaning of the verb, they are quite variable. The agent who kicks is not the same as the agent who sings, and the act of seeing is even more different. All languages lump together a range of thematic roles and assign them the same case as "prototypical" *agents* and *patients*. Further discriminations among thematic roles may be given special case treatment in particular languages. In English, the two arguments of relational sentences such as possessives and comparatives are marked NOM/ACC just like the arguments of canonical transitives.

- | | | | | | |
|-----|----|--------------|-----|----|-------------|
| (69 | a) | I have them. | | b) | That's him. |
| | | NOM | ACC | | NOM |
| | | | | | ACC |

- | | | | | | |
|-----|----|-----------------------------|-----|----|---------------|
| (70 | a) | They exceed us in strength. | | b) | He outran me. |
| | | NOM | ACC | | NOM |
| | | | | | ACC |

We turn now to a consideration of comparative and relational sentences in Jicarilla, and demonstrate how the *yi-/bi-* alternation operates in these sentence types to affect a change in the thematic role (canonical *agent* and *patient*) of the

Subject argument, enabling the speaker to place either argument of the construction in focus as Subject.

5. Comparatives

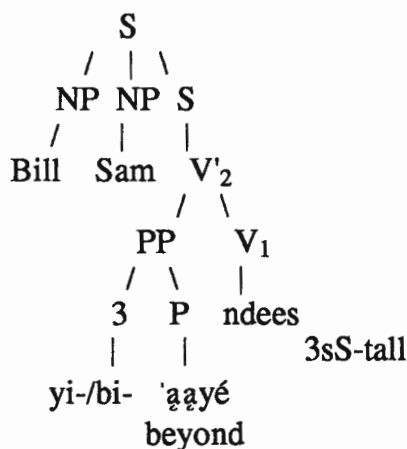
The function of the *yi-/bi-* alternation in comparative sentences was first described in Sandoval (1984). The comparative is a transitive construction, a complex verb in which the *yi-/bi* alternation serves to assign either an agent or a patient θ -role to the SUBJECT. In the case of comparatives, there seems to be only one postpositional phrase that is employed: *yi-/bi-'aayé* ('beyond', more than').

- (71) Bill Sam *yi'aayé* ndees
 yi-beyond 3sS-tall
 'Bill is taller than Sam.'

- (72) Sam Bill *bi'aayé* ndees
 bi-beyond 3sS-tall
 'Bill is taller than Sam.'

The structure of comparatives, a V'2 with a postpositional phrase and a stative verb, is illustrated below.

(73)



yi'aayé - ndees

to-be-taller-than

bi'aayé - ndees

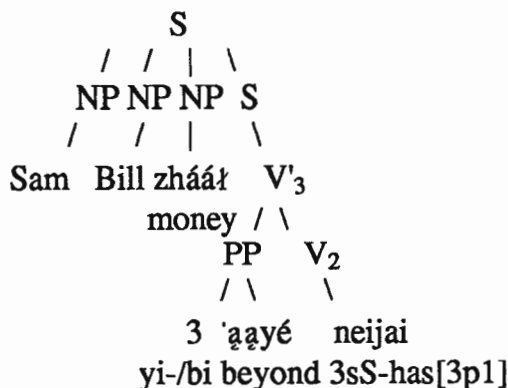
Another example of a comparative complex verb is a possessive sentence with three NPs. Here, the *bi*-construction serves, as elsewhere, to give some argument that does not have the θ -role agent the grammatical relation of SUBJECT.

(74) Sam Bill zháát yi'aayé neijai
 money yi-beyond 3sS-has [3pl]
 'Sam has more money than Bill.'

(75) Sam Bill zháát bi'aayé neijai
 money bi-beyond 3sS-has [3pl]
 'Bill has more money than Sam.'
 [zháát, from Spanish 'real']

This has the following structure:

(76)



yi'ááyé - neijai

to-have-more-X-than

bi'ááyé - neijai

6. Relational Sentences

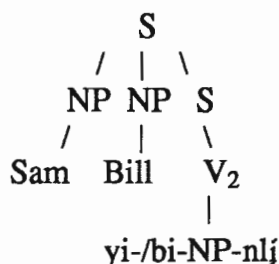
There is an interesting sentence type in Apachean where a noun is combined with the copular verb *nlí* to make a derived transitive verb, V_2 . (There is no postpositional phrase in these sentences, so we do not label them V'_2). The *yi-/bi-* contrast is present, just as in any other transitive sentence.

- (77) Sam Bill yiyi'íí-nlí
 yi-son-3sS-is
 'Sam is Bill's son (is-son-to).'

- (78) Sam Bill biyi'íí-nlí
 bi-son 3sS-is
 'Bill is Sam's son (is-son-to).'

The sentence has the structure shown in the following tree:

(79)



yiyi'íí-nl\acute{i}

to-be-son-to

biyi'íí-nl\acute{i}

In these relational sentences, not just any NP can be incorporated into the V_2 . It has to be a nominal that refers to some relationship: kinship terms, and others like

(80) Bill Sam yidekéh - nl\acute{i}

yi-friend 3sS-is

'Bill is Sam's friend.'

(81) Bill Sam yinant'án - nl\acute{i}

yi-leader 3sS-is

'Bill is Sam's leader.'

Nominals can also be incorporated into possessive sentences like the one shown in the previous section. Compare (72) above with the following, where the word order is different, and the nominal *zháát* has been incorporated into the V_3 :

(82) Bill Sam yi'aáyé zháát - neijai

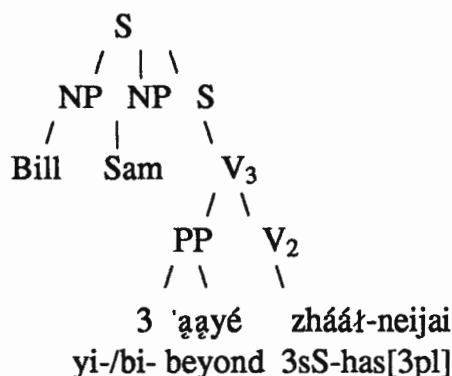
yi-beyond money 3sS-has [3plO]

'Bill has more money than Sam.'

- (83) Bill Sam bi'ąąyé zháát - neijai
bi-beyond money 3sS-has [3plO]
 'Sam has more money than Bill.'

The corresponding structure is:

(84)



yi-'ąąyé-zháát-neijai

to-have-more-money-than

bi-'ąąyé-zháát-neijai

There is a slight difference in meaning between the following:

- (85) Bill Sam zháát yi'ąąyé neijai

- (86) Bill Sam yi'ąąyé zháát neijai

In the first, the emphasis is on the "money"; in the second, the emphasis is on "having more."

In Sections 5 and 6, we have seen that Jicarilla Apache gives comparative, possessive, and relational sentences the same syntactic status as canonical transitives with more typical "agents" and "patients." We have also shown how the *yi-/bi-* alternation can be employed in these sentence types to place arguments with contrasting thematic roles in Subject position.

7. Concluding Remarks

The goal of this paper has been to demonstrate that the Apachean languages are Pronominal Argument Languages, and to show how the *yi-/bi-* alternation functions in Apachean to give arguments with contrasting θ -roles the grammatical relation of Subject, and to mark changes in the coindexing of pronominal arguments and optional nominal adjuncts. The *bi-* construction is a transitive, *inverse* construction, as claimed by Willie (this volume). A very considerable group of languages restricts arguments to simple pronominal elements, with profound consequences throughout the syntax. Pronominal Argument Languages are found in Africa, the Americas, Asia, Australia, and the Pacific (Jelinek, 1985). Pronominal Argument Languages show that there is no universal syntactic requirement that a Subject NP, -- that is, a lexical subject that is [NP,S] at the level of phrase structure -- be present in every clause, and point up the fact that problems concerning the status of the morphology/syntax boundary in universal grammar need to be resolved.

Notes

1. The analysis of Apachean presented here was conducted while the first author (Sandoval) was completing work leading to the M.A. degree in Linguistics at the University

of Arizona in 1982-1984. Sandoval is a native speaker of Jicarilla Apache and is fluent in Navajo. The Jicarilla Apache example sentences given here are based on his speech. We want to thank Ken Hale for his invaluable comments and criticisms. Richard Demers gave advice and help; and we are also indebted to Keren Rice and Leslie Saxon. None of these can be blamed for our errors.

2. If "configurational" is defined as "having a VP node" then the Apachean languages are non-configurational. Word order, as will be shown, is not free. See Jelinek (1984, 1985).
3. There are Jicarilla Apache sentences in which a nominal is a required constituent. These include copular sentences.

- i) 'abáachi nnshǫ́
 Apache 1sg-be
 'I am a Jicarilla Apache'

Our claim is that the nominal '*abáachi*' here is neither a subject nor an object, but a predicate, and that the 1sg prefix on the copular verb is the subject of the sentence. The copula and the predicate noun form a complex predicate. (See also Section 6 on relational sentences.) Similarly, there is a locative verb which requires a postpositional phrase which may include a nominal.

- ii) kǫghǫ́'éeé sidá
 house-at 3sgS-sit
 'He is at home.'

And an existential verb:

- iii) *ʔeet'án goni*
 bread 3sg-exist
 'There is bread.'

Our claim is that in (iii) the nominal *ʔeet'án* is an adjunct to the 3sg theme pronominal argument. Nominal adjunction is the central topic of this paper.

4. The Jicarilla form *ch'ekée* is cognate with a Navajo word '*at'ééké* 'girls' that is plural in number. In Jicarilla Apache, it is undifferentiated as to number.
5. The corresponding inflected postposition in Navajo would be *baa*. There is considerable variation in the use of *bi-* and *mi-* as third person markers in Jicarilla Apache, as succeeding examples will show. Older persons tend to use *bi-* more consistently; we will not deal with this variation here.
6. It is possible to mark a noun distributive when the thing(s) spoken of are scattered about widely, and the speaker wants to emphasize this fact:
 - i) *zas*
 'snow'
 - ii) *daazas*
 'snow spread all over, everywhere'
7. The "handling" or classificatory verbs do not show "agreement" with nominal adjuncts; on the contrary, they may assign certain interpretations to the nominals. Hoijer (ms) observed:

"... the meaning of a given noun may be altered significantly depending upon the verb to which it functions as topic or goal...we find many nouns that may

occur with a number of classificatory verbs ... Thus, the noun *béeso* (from Spanish *peso*) names a coin when it is the goal of the round, solid object verb, a handful of change when it is the goal of the verb referring to a set of small objects, and a piece of paper money when it is the goal of the fabric-like object verb. Similarly, the noun *çiz* names a lumpish bit of firewood when combined as goal with the round, solid object verb, a stick of firewood when it is the goal of the long slender object verb, and a bundle of firewood when it is the goal of the mass of objects verb."

(Hojjer appears to be using 'goal' as synonymous with 'topic' here.)

8. There is a lexical passive in Apachean (see discussion in Young and Morgan 1980). This lexical passive is an intransitive, and permits only one nominal adjunct. The single verbal argument has the θ -role *theme*. An example in Jicarilla is:

i) shi'deeshchí
 1sS-born-PASSIVE
 'I was born.'

Like many lexical passives across languages, this construction does not permit an agent to be stated. This intransitive is very different from the *bi*-construction, which is transitive, requiring two pronominal arguments and permitting two nominal adjuncts.

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Lexical versus Syntactic Projection: The Configurationality of Slave¹ Leslie Saxon

1. Introduction

The two Athapaskan languages Navajo and Slave² are similar to each other, and different from English, in allowing sentences without overt NPs. Thus, besides (1a) (Navajo) and (2a) (Slave), we also find (1b) and (2b), with NPs 'omitted'. English sentences parallel to the (b) examples are impossible, as (3b) shows.

Navajo

- (1 a) Shí díí 'ashiiké bich'odeeshniił.
I this boy.p 3.1s.take the side of
'I'll take the side of these boys'
- b) Bich'odeeshniił.
3.1s.take the side of
'I'll take his side'

Slave

- (2 a) Sarah k'áhjine sedéhcho. (B)
almost 1s.3.IMP.be of a size with
'Sarah is almost as tall as me'
- b) K'áhjine sedéhcho.
almost 1s.3.IMP.be of a size with
'She is almost as tall as me'

- (3 a) The woman sharpens the knife.
 b) *Sharpens.

Within government-binding theory as developed in Chomsky (1981), two approaches have been taken to this contrast between languages in terms of the presence of overt NPs: the 'empty category' approach, and the 'non-configurationality' approach. It is the purpose of this paper to determine which of these two approaches is appropriate for describing Slave. The remainder of this introduction is devoted to clarifying the differing claims of these approaches, using example (1) as a focus of discussion. Section 2, a discussion of Navajo, serves chiefly as a source of comparison with the discussion of Slave in section 3. Section 4 considers the implications of previous sections for language acquisition and language change. Within government-binding theory, two principles are responsible for determining how NPs are associated with a clause, the Theta Criterion and the Projection Principle. The Theta Criterion is relevant for the level of grammatical structure (called 'Logical Form') at which the semantic interpretation of, for example, predicate-argument relations takes place. It states that there is a one-to-one relation between the semantic (theta) roles assigned by predicates, and arguments filling these roles. Thus, according to the Theta Criterion, because the predicate *sharpen* has associated with it two semantic (theta) roles, agent and patient, there must be two arguments associated with *sharpen* at the level of Logical Form. The Projection Principle operates to require that whatever theta relations hold at the level of Logical Form as a result of the Theta Criterion also exist at all other levels of syntactic structure. The Theta Criterion and Projection Principle can be stated as in (4).

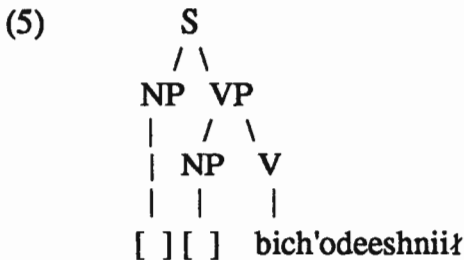
- (4) The Theta Criterion (Chomsky 1981:36)
 Each argument bears one and only one theta role, and each theta role is assigned to one and only one argument.

The Projection Principle (Brody 1984:374)

If **A** theta-marks **B** (**B** a category or a position) at some level, then **A** theta-marks **B** at all levels.

In a theory incorporating the principles in (4), every argument of a verb must be realized syntactically, either as an overt NP, or as an empty category, indicated by []. According to this approach, English and Navajo differ in that Navajo, but not English, has available to it a range of 'empty NPs' to fill the syntactic positions which are assumed to exist because of the Projection Principle but which are not matched by overt NPs. English is limited in the types of empty NPs it allows: the ungrammaticality of (3b) is seen as a direct consequence of this limitation.

This approach leads to analyses of Navajo sentences which are full of empty NPs. For example, (1b) would have the syntactic structure (5) in this framework.

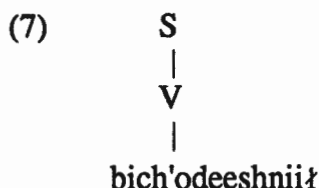


Several investigators have proposed alternatives to the 'empty category' approach. Hale (1983), in a discussion of Warlpiri, a language of Australia, has proposed that the Projection Principle applies to different languages in different ways; that is, that there is a parameter involving the Projection Principle along which languages vary. His proposal is taken up, in a modified or elaborated form, by Jelinek (1984) in further work on Warlpiri, by Sandoval (1984) and Sandoval and Jelinek (this volume) in work on Apache, and by Willie (this volume) in work on Navajo. Hale's formulation of the parameter is given in (6).

(6) Configurationality Parameter (Hale 1983:26)

- a) In configurational languages, the Projection Principle holds of the pair (LS, PS).
- b) In non-configurational languages, the Projection Principle holds of LS alone.

In Hale's system, LS refers to 'lexical structure', "the argument structure of a predicator (e.g., a verb)" (Hale 1983:11). PS refers to 'phrase structure'. The Configurationality Parameter is thus interpreted as making the Projection Principle hold in 'configurational' languages as before, so that at PS all arguments must be present as NPs, whether empty or overt; but making the Projection Principle irrelevant to the PS of 'non-configurational' languages. Since, according to the Configurationality Parameter, arguments in 'non-configurational' languages need not be matched by NPs in PS, there is no justification from the Projection Principle for including empty NP nodes at this level. According to these assumptions, if Navajo is a 'non-configurational' language, then the PS for Navajo (1b) would be as in (7).



The LS of this sentence, on the other hand, resembles (5), following the Configurationality Parameter requirement that the thematic structure of clauses be given explicit form in LS representations even in 'non-configurational' languages.

Since the parameter depends on a difference in the application of the Projection Principle, I propose to rename it the Projection Parameter, and call configurational languages 'syntactically projected', and non-configurational languages 'lexically projected'.³

One of the effects of the Projection Parameter is the elimination of 'empty NPs' in the PS of lexically projected languages. In syntactically projected languages, however, 'empty NPs' may be required in PS, as under the 'empty category' approach, to satisfy the Projection Principle. Thus, syntactic projection falls together with the 'empty category' approach, in opposition to lexical projection.

NPs 'missing' from PS are treated differently under syntactic and lexical projection. So are overt NPs. In syntactically projected languages, overt NPs fill argument positions in syntactic structure. Following a proposal of Jelinek (1984), I assume that in lexically projected languages the argument structure of clauses is satisfied at the level of LS. Under this hypothesis, overt NPs are not arguments in a clause, but have another function. As Jelinek (1984:44) describes them: "nominals are simply optional adjuncts, with non-argumental functions."

In exploring the position of Slave with respect to the Projection Parameter, I discuss Slave evidence from the optionality of NPs and from questions, and conclude that Slave is syntactically projected. Navajo has been assumed to be lexically projected (see Willie this volume, and also Hale 1985), therefore this result raises interesting questions about the origins of this typological distinction within the Athapaskan family.

2. Navajo

For Navajo,⁴ the data supporting the idea that it is a lexically projected language comes from the fact that if any overt (non-predicational) NP⁵ in a Navajo clause is omitted, a grammatical sentence remains, as the contrasts between the (a) and (b) examples in (1) and below illustrate.⁶ This fact accords well with the claim that overt NPs in Navajo are optional adjuncts in the clause.

In each of (8b)-(10b), a NP is 'missing', which is matched in (8a)-(10a) by the italicized pronominal inflection.⁷

- (8 a) *Béeso* *bik'é* naashnish.
 money 3.for 1s.IMP.work
 'I work for money'
 b) *Bik'é* naashnish.
 3.for 1s.IMP.work
 'I work for it'

- (9 a) *Tó* *yíih* *dzííłhaal*.
 water 3o.into 3.PF.fall
 'He fell into the water'
 b) *Yíih* *dzííłhaal*.
 3o.into 3.PF.fall
 'He fell into it'

- (10 a) *Shí* 'asdzaa.
 1s 1s.PF.do
 'I did it'
 b) 'asdzaa.
 1s.PF.do
 'I did it'

In (11a) and (12a), the subject NPs *diné* 'man' and *nimá* 'your mother' are represented by zero third person subject inflection.

- (11 a) *Diné* *náshidiiłtí*.
 man 1s.3.PF.pick up
 'The man picked me up'
 b) *Náshidiiłtí*.
 1s.3.PF.pick up
 'He picked me up'

- (12 a) *Nimá nika 'ání.*
 2s.mother 2s.for 3.IMP.call
 'Your mother is calling for you'
- b) *Nika 'ání.*
 2s.for 3.IMP.call
 'She is calling for you'

In (13a) and (14a), the direct object NPs *shich'ah* 'my hat' and *chidí* 'car' are represented by zero third person direct object inflection.

- (13 a) *Shich'ah ndii'á.*
 1s.hat 1s.PF.pick up
 'I picked up my hat'
- b) *Ndii'á.*
 1s.PF.pick up
 'I picked it up'
- (14 a) *Chidí niníłbááz.*
 car 1s.PF.park
 'I parked the car'
- b) *Niníłbááz.*
 1s.PF.park
 'I parked it'

In order to account for these facts in Navajo, and similar facts in Apache and the Australian language Warlpiri, Hale (1983, 1985), Jelinek (1984), Sandoval (1984), Sandoval and Jelinek (this volume), and Willie (this volume) propose that these languages are lexically projected languages,⁸ in which overt NPs are adjuncts to clauses or phrases, while the argument positions subcategorized for by verbs and other elements are filled (possibly by pronominal inflection) in LS. Thus in (8), *béeso* 'money' is not directly associated with *-k'é* 'for' as its argument, according to this view; rather, as is the case with other adjuncts, it provides additional, in some sense

- b) Deshítée k'erá?ekeruhsi.
 floor 3p.OPT.wash
 'They will wash the floor'

- (17 a) Lì wihk'é. (H)
 dog 1s.PF.shoot
 'I shot the dog'
 b) Wihk'é.
 1s.PF.shoot
 'I shot it'

As is the case with the 'omission' of subject and direct object NPs in Navajo, these 'omissions' in Slave do not produce ungrammaticality. We will see directly that the contrast which does exist between Slave and Navajo appears to be related at a superficial level to a difference in their inflectional patterns. It is important therefore to note here that in the case of 'missing' subjects and direct objects, the presence of overt inflection corresponding to the 'missing' NP has no bearing on the grammaticality of the sentence with the 'missing' NP. In Slave, as in Navajo, subjects or direct objects may be 'omitted' even if, as in (17) or (14) above, no overt inflectional category marks that NP.

In the case of possessors, and the oblique objects of verbs and postpositions, the common generalization to be arrived at for both Slave and Navajo is very different: the grammaticality of sentences with these NPs 'missing' correlates exactly with the presence of overt inflection. In Navajo, as we saw earlier in (8a) and (9a), oblique object NPs co-occur with overt inflection. When the NP is 'omitted', as in (8b) and (9b), inflection remains, and the sentence is grammatical. (Compare also note 6.) In Slave, as we see below in (18a)-(20a), oblique object and possessor NPs do not necessarily co-occur with overt inflection. In such cases, 'missing' oblique object and possessor NPs produce ungrammaticality.¹⁰ (In the (b) examples, the position of the 'missing' NPs is marked by __.)

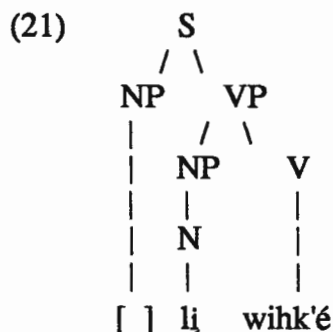
- (18 a) *Bee* hé tádiḥwee. (H)
 knife with 2s.IMP.cut
 'Cut it with the knife'
- b) * __ hé tádiḥwee.
 with 2s.IMP.cut
 (Cut it with (it))
- c) Behé tádiḥwee.
 3.with 2s.IMP.cut
 'Cut it with it'
- (19 a) Sú *tuwele* k'ágoweneli ? (H)
 Q soup 2s.PF.taste
 'Have you tasted the soup?'
- b) *Sú __ k'ágoweneli?
 Q __ 2s.PF.taste
 (Have you tasted (it)?)
- c) Sú bek'ágoweneli ?
 Q 3.2s.PF.taste
 'Have you tasted it?'
- (20 a) *Charlie* lié (H)
 dog(Poss'd)
 'Charlie's dog'
- b). * __ lié cf. li
 dog(Poss'd) dog
 ((his) dog) 'dog'
- c) belié
 3.dog(Poss'd)
 'his dog'

The examples of (18)-(20), grammatical with an overt NP, as in (a), are ungrammatical if the NP is 'missing', as in (b). The (c) examples show that if an overt inflectional form is used to 'replace' the missing NP, grammatical sentences are again found.

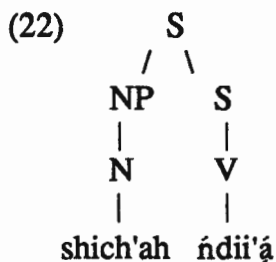
The adjunction theory of overt NPs for lexically projected languages depends for its intuitive support on the observation that an overt NP may be 'missing' from PS with no effect on the grammaticality of the sentence from which it is 'omitted'. While the observation holds generally true of Navajo on account of the co-occurrence of NPs with overt inflection, the same cannot be said of Slave. The Slave examples in (18)-(20), grammatical with an overt NP, are ungrammatical if the NP is absent. Thus it seems that in Slave, unlike Navajo, overt NPs are not optional adjuncts to phrases or clauses, providing information in addition to what is supplied by inflection. Instead, overt NPs are the actual arguments of argument-taking categories such as verbs, postpositions, VPs, and nouns. If this is the case, Slave is not a lexically projected language, but a syntactically projected language.

Let us compare the PS for sentences containing overt NPs in Slave (17a) and Navajo (13a), under the hypothesis that Slave is syntactically projected and Navajo is lexically projected.

- (17 a) *Li wiħk'é.*
 dog 1s.PF.shoot
 'I shot the dog'



- (13 a) *Shich'ah* *ndii'ă*
 1s.hat 1s.PF.pick up
 'I picked up my hat'



In (22), *shich'ah* 'my hat', corresponding to the patient of the verb, is adjoined to S rather than being a sister of the verb like the patient *lî* 'dog' in (21). The hierarchical positioning of the NPs in (21) and (22) encodes the claim that in syntactically projected languages overt NPs are arguments, while in lexically projected languages they are adjuncts.

3.2 Syntactic evidence

Is there a way to test these claims about the PS status of 'empty' or overt NPs? It seems to me that it is next to impossible to determine on empirical grounds whether a certain position is occupied by an empty NP or whether that position does not exist.¹¹ Let us consider instead the claim concerning the different status of overt NPs as arguments or non-arguments. In this section I will present empirical evidence that in Slave, overt NPs are arguments, not adjuncts. The evidence depends on a contrast in grammaticality among Slave questions in which the question word is fronted. The contrast follows the pattern expected if some overt elements of clauses are considered to be arguments and others to be adjuncts. This dichotomy between arguments and adjuncts is not defined in lexically projected languages, since all overt

(26) Question word fronted

- a) ?ayfi Raymond [Jane *t* náyéhdí] kodiḥsho? (B)
 what 3.PF.buy 3.IMP.know
 'What does Raymond know Jane bought?'
- b) ?ayfi netá [*t* yegháĩndá] kenéhdzáh? (S)
 what 2s.father DA.3.PF.look at 3.PF.try
 'What did your father try to look at?'
- c) *Wodq sé moot'ike [*t* neté] ?agihthe? (S)
 when Foc 3.people 3.IMP.lie down 3p.IMP.cause
 'When do his parents make him go to bed?'
- d) *?ode netá [*t* nimbáa enáih?á] kenéhdzáh? (S)
 where 2s.father tent 3.PF.pitch 3.PF.try
 'Where did your father try to pitch the tent?'

Notice that the examples with question words *in situ* are invariably grammatical, as shown in (25). In contrast, some of the examples in (26) with fronted question words are grammatical, but others are not. In these examples, the *t* represents the syntactic position with which the fronted question word is associated. In the grammatical examples (26a) and (26b), the fronted question word is a NP assigned a theta role by the embedded verb. This is not true of the question words in (26c) and (26d). The descriptive generalization that seems to emerge from this contrast, according to Rice (forthcoming), is the following:

- (27) Fronted questions in which the question word is semantically associated with an embedded clause are grammatical if the question word corresponds to an argument of the embedded clause, but ungrammatical if the question word corresponds to an adjunct of the embedded clause.

Let me sketch below the details of one analysis of fronted questions into which this generalization fits.

From comparing the Slave fronted questions in (26) with the English fronted questions below in (28) and (29), it is apparent that the analysis often assumed for English questions cannot be maintained for Slave: unlike Slave questions, English questions are grammatical with either arguments or adjuncts fronted from embedded clauses, as (28) with arguments, and (29) with adjuncts show.

- (28) a) What did Jill tell you that she wanted *t* ?
 b) Who did Janis suggest that I see *t* ?
 c) Who was Frances expecting that Bob would show up with *t* ?
- (29) a) How did Jill tell you that she wanted her tea *t* ?
 b) Where did Janis suggest that we meet Sylvia *t* ?
 c) When was Frances expecting that Bob would introduce Bill to Sam *t* ?

(The examples in (29) are ambiguous, in that the question word in each may be semantically interpreted as an adjunct either to the matrix clause or to the complement clause. Only the latter interpretation is of interest to us here.)

It is often assumed that English questions arise by movement of the question word from its original position *t* to sentence-initial position. Let us hypothesize that Slave questions are not generated in this way, by movement of the question word, but that they are produced through base generation, with the question word in its fronted position originally. According to these hypotheses, and following the theoretical assumptions of Chomsky (1981), the syntactic structures for the English (28a) and (29a), and the Slave (26a) and (26d), would be as in (30)-(33).

- (30) (= (28a))
 [_S' what [_S Jane tell you [_S' that *t*' [_S she wanted *t*]]]]

(31) (= (29a))

[_S' how [_S Jane tell you [_S' that *t*' [_S she wanted her tea *t*]]]]

(32) (= (26a))

[_S'?ayfi [_SRaymond [_S' [_S Jane *t* náyéhdí]] kodiḥsho]]

(33) (= (26d))

*[_S'?ode [_S netá [_S' [_S' *t* nimbáa enáih?á]] kenéhdzáh]]

There is an important contrast to note between the syntactic structures for the English and Slave examples which derives from these assumptions concerning the movement and base generation analyses. It is assumed that the movement of question words as in (30) and (31) is successive cyclic. That is, *what* or *how* in these examples is assumed to move from its original position *t* first to a position within COMP of the embedded clause (*t*'), and from there to successively higher COMP positions. Thus the syntactic structures (30) and (31) contain the traces of two movement operations, *t* and *t*'.

In structures in which the question word is base generated in sentence-initial position rather than getting there by movement, as in the Slave examples (32) and (33), the question word is not associated with any traces of successive cyclic movement in COMP positions, but only with the most deeply embedded position *t*. Association with this position allows the question word to be integrated with the rest of the sentence for semantic interpretation.

We can account for the contrasts among (30)-(33) if we assume that the empty categories *t* in these sentences are subject to the Empty Category Principle (the ECP) of government-binding theory. In this theory there exist several principles whose function it is to limit the distribution of the essentially abstract empty categories. The Empty Category Principle is one of these. It states that an empty category¹³ cannot occur except in the immediate syntactic context either of the lexical item which assigns a semantic (theta) role to it, or

of a category which is its antecedent. An empty category which meets these conditions is said to be 'properly governed', either by a lexical governor, or by an antecedent governor. The notion 'governs' is responsible for the requirement that the empty category be found in the same local syntactic domain as the category which sanctions it. The ECP can be stated as in (34).

(34) The Empty Category Principle (Chomsky 1981)

- An empty category must be properly governed,
 where: A properly governs B, if A governs B and
 i. A is a lexical category, or
 ii. A is an antecedent for B.

Since we assume that a lexical category only governs those constituents for which it is subcategorized--since only subcategorized for elements are assigned theta roles by lexical categories, then proper government by part (i) is restricted to the proper government of arguments. Only by part (ii) are adjuncts properly governed.

Consider how the ECP applies to the English (30) and (31). In (30), the empty category *t* corresponding to *what* is properly governed by its lexical governor, the embedded verb.¹⁴ In (31), although the empty category *t* corresponding to *how*, being an adjunct, has no lexical governor, the trace of successive cyclic movement *t'* may serve as its antecedent proper governor by (34ii), saving (31) from violating the ECP on account of *t*.

Now consider the Slave (32) and (33). In (32), the empty category *t* corresponding to *ʔayii* 'what' is properly governed by its lexical governor, the embedded verb, exactly as in the English (30). The *t* corresponding to *ʔode* 'when' in (33), however, has no proper governor: it does not have a lexical proper governor, being an adjunct. Since we assumed that fronted questions in Slave are formed by base generation rather than by movement, there is no intermediate trace *t'* in (33) to serve as the antecedent proper governor of *t*. The

question word *?ode* itself may not serve this function because it is not in the immediate syntactic context of *t* and therefore cannot be said to govern it. With *t* in (33) not properly governed, (33) is ungrammatical. Thus, in this analysis, the effects of the ECP produce the descriptive generalization in (27).

This analysis of the contrasts in (30)-(33) depends on two assumptions: the ECP, and the assumption that Slave questions are produced by base generation. In fact, what is at issue here is not so much the correctness of this particular analysis, but rather the apparently irreducible fact that any analysis of Slave questions must invoke a contrast between adjuncts and arguments.¹⁵ It is the essence of lexical projection that this distinction is undefined in syntax: in a lexically projected language, all overt NPs are adjuncts. Therefore, it seems that Slave is not among the class of lexically projected languages, but is syntactically projected.

It is particularly significant that the contrast in Slave between arguments and adjuncts is seen in fronted questions. The issue of the Projection Parameter concerns the position of adjuncts/arguments at syntactic levels of structure. The grammaticality of the examples showing question words *in situ*, (25), seems to suggest that the ungrammaticality of the fronted questions in (26) is not due to semantic deviance, but to syntactic deviance. That is, there is little doubt that the contrast among fronted questions turns on properties of syntactic structures rather than anything else.¹⁶

4. Conclusion

I have argued on the basis of two sorts of evidence that Slave is a syntactically projected language. I showed in section 3.1 that Slave NPs do not demonstrate the 'optionality' predicted of NPs in lexically projected languages, in which NPs are considered to be adjuncts. I showed in section 3.2 that a

description of Slave questions seems to presuppose a contrast between adjuncts and arguments in Slave phrase structure. Since this contrast is only available in syntactically projected languages, the evidence from questions strongly supports calling Slave a syntactically projected language, despite the common assumption that Navajo is a lexically projected language.

It is an interesting question to ask how this parametric divergence in the Athapaskan family came about. Until more linguistic facts relevant to the parameter become known, however, it is a difficult question to answer. Perhaps the 'exceptional' constructions in Navajo and Slave described in notes 6 and 10 will provide clues in the investigation.

A less difficult question to answer perhaps is this: how do Navajo and Slave children recognize their languages as lexically or syntactically projected? For the Navajo child, the crucial evidence must be of the following type:

- (35 a) Mary ba
 3.for
 'for Mary'
 b) ba
 3.for
 'for her/him'

The children learn from contrasts such as these that the occurrence or non- occurrence of an overt NP in a phrase does not affect the availability of the form, or its morphological structure. They thus recognize Navajo as lexically projected. This is not what Slave children learn, however. They hear (36), but never (37).

- (36 a) Mary gha (B)
 for
 'for Mary'

- b) begha
 3.for
 'for her/him'

- (37) *gha
 for
 (for (her/him))

They may deduce from this that the occurrence or not of an overt NP in a phrase is significant and therefore that Slave is syntactically projected. There is much surface evidence in Slave, the evidence of subject and direct object NPs as in (15)-(17), for example, which would be consistent either with the hypothesis that Slave is a syntactically projected language which allows a variety of empty categories or with the hypothesis that Slave is a lexically projected language. Despite this, however, evidence like that shown in (18)-(20) and (36)-(37) provides the crucial evidence that leads to the choice of the first of these hypotheses. Once this choice is established, it is to be expected that its consequences will be seen in less transparent areas of Slave syntax, for example, in the interaction of Slave question formation with the ECP.

Notes

1. I would like to express my appreciation to Keren Rice for providing the Slave data discussed in this paper, for her comments on earlier drafts, and for her constant support. Many thanks also to Eloise Jelinek for comments which were a great help to me in clarifying a number of issues. An earlier version of this paper was presented at the Eastern States Conference on Linguistics (ESCOL), October 1985, SUNY/Buffalo.

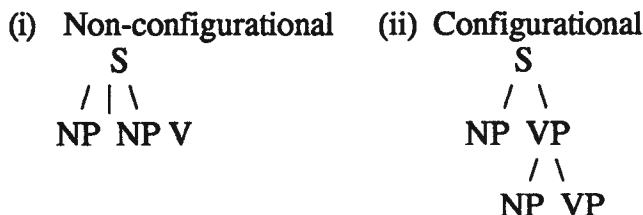
Abbreviations:

- | | | | |
|---|--------------|-----|--------------|
| 1 | first person | IMP | imperfective |
|---|--------------|-----|--------------|

2	second person	PF	perfective
3	third person	OPT	optative
s	singular	Poss'd	possessed form
d	dual	DA	disjoint anaphor
p	plural		(=third person obviative)
o	obviative	FOC	focus marker

2. Slave is a language of the Mackenzie drainage area in northwestern Canada. The data in this paper are taken from three dialects, Hare, Bearlake, and (southern) Slavey. While the dialects show phonological and lexical differences, no syntactic differences among them relevant to the discussion in this paper have been discovered. Each Slave example is labelled H, B, or S to identify the dialect from which it comes.

3. In the earliest work on 'configurationality' (for example, suggestions in Hale, Jeanne, and Platero 1977, Hale 1981, and Farmer 1980), it was hypothesized that the distinction between a configurational and a non-configurational language depends on properties of the phrase structure rules found in the language, rather than on how the Projection Principle operates in each. According to this hypothesis, non-configurational languages are typified in having 'flat' constituent structure, contrasting with the more elaborate constituent structure found in configurational languages. In particular, it was hypothesized that non-configurational languages have a basic sentence structure lacking a VP node, as in (i), while configurational languages have a basic sentence structure with a VP node, as in (ii).



This notion of non-configurationality is logically distinct from the notion of non-configurationality presented in the text. Therefore, I propose to reserve the terms configurational/non-configurational for the contrast shown in (i) - (ii), and to use the terms lexically projected/syntactically projected for the contrast which depends on the 'Configurationality/Projection Parameter', and which is the focus of this paper. (For more recent research which addresses the question of configurationality in the sense of (i)-(ii), see Bouchard 1984, Saito 1985.) Note also that since I assume that configurationality in the sense of (i)-(ii) is independent of projection type, there may exist languages which lack a VP node which are syntactically projected. Since I have found no evidence which suggests that Slave lacks a VP node, I assume that such nodes exist in the language. It is not my purpose to address that issue in the present paper. (But see Rice this volume, for an interesting argument that VP indeed does exist in Slave.)

4. Navajo data is from Young and Morgan (1980).
5. Sandoval and Jelinek (this volume) and Jelinek (personal communication) note that predicational NPs as in (i) below (examples from Jicarilla Apache) cannot be omitted.

- (i) a. abáachi nnshítí.
 Apache 1s.IMP.be
 'I am a Jicarilla Apache'

- b. *nnshłĩ
 1s.IMP.be
 (I am (it/one))

6. In fact, there seem to be occasional exceptions to this strong statement. In their discussion of postpositions, Young and Morgan (1980) note that the following are possible:

- (i) Shádí k'eh yáníłti'
 1s.older sister according to 2s.IMP.talk
 'You talk like my older sister'

- (ii) T'áá shínii k'eh 'ásht'ĩ.
 just 1s.mind according to 1s.PF.do
 'I did it of my own free will'

- (iii) dził-ta'-gi
 mountain.between.at
 'between the mountains; inter-mountain'

- (iv) Gah yázhí yas tah yilwoł go yíłtsá.
 rabbit little snow among 3.IMP.runCOMP 1s.PF.see
 'I saw the little rabbit running in (among) the snow'

These examples show uninflected postpositions (*k'eh*, *ta'*, *tah*) which are immediately preceded by their NP objects. In these cases, ungrammaticality results from the omission of the NP object of the postposition, as in (v), for example:

- (v) *k'eh yáníłti' (cf. (i))
 (you talk like (her))

These examples therefore resemble the Slave examples (18)-(20) below in the text, on the basis of which I find Slave to be syntactically projected.

Young and Morgan consider such exceptional examples of postpositional use, particularly those like (iii), to be lexical compounds, rather than phrases (p. 73). Their gloss of (iii) as 'inter-mountain' illustrates this view. Further supporting this view are their observations that in many cases there are severe limitations on what combinations of noun and postposition may appear in this construction, for example:

The compound postpositional stem -niit'aa combines with the stem nouns kin, building, house and tsé, rock, cliff in kiniit'aa, along the house, along the row of buildings, along the street, and tséniit'aa, along the cliff. (Young and Morgan: 1980, 95)

In note 10, we see a construction involving possession in Slave which has more the character of lexical projection than of syntactic projection. If Athapaskan languages are undergoing a process of change from syntactic to lexical projection, then these Navajo examples are historical remnants, and the Slave example is a construction ahead of its time.

7. In the Navajo examples in this paper, the following inflectional affixes occur marking person and number distinctions.

	subject	non-subject
1s	sh-	shi-
2s	ni-	ni-
3	(zero)	(zero)/bi-
3o	--	yi-

For more on Apachean inflection, see Young and Morgan (1980), Sandoval (1984), Sandoval and Jelinek (this volume), and Willie (this volume).

8. Hale (1983, 1985) uses the term 'non-configurational language'; Sandoval and Jelinek (this volume) and Willie (this volume) use the term 'pronominal argument language'.
9. Slave data is from Rice (forthcoming; personal communication).
10. In one Slave construction, the absence of an overt NP possessor does not lead to ungrammaticality. Contrast the examples in (i) and (ii) with (20).

- | | |
|---|---|
| <p>(i) a) Margaret bemq
 3.mother
 'Margaret's mother'</p> <p>b) bemq
 3.mother
 'her/his mother'</p> | <p>c) *Margaret __ mq
 mother
 (Margaret's mother)</p> <p>d) *mq
 mother</p> |
| <p>(ii) a) ?ehkee bekwí
 boy 3.head
 'the boy's head'</p> <p>b) bekwí
 3.head
 'his/her head'</p> | <p>c) *?ehkee __ kwí
 boy head
 (the boy's head)</p> <p>d) *kwí
 head</p> |

These examples, unlike (20), involve inalienably possessed nouns (kin terms, body parts, etc.), which are obligatorily inflected to show a possessor. (The sense of 'the mother' or 'the head' is expressed as *gom q* '(someone's) mother' or *gokwí* '(someone's) head'.)

11. See McCloskey and Hale (1984), however, for a remarkably successful attempt at this for Irish.
12. In Slave, as in other Athapaskan languages, indirect discourse and direct discourse complements to higher verbs must be distinguished. I describe below questions from indirect discourse complements. For questions from direct discourse complements, see Rice (forthcoming).
13. Only some empty categories are assumed to fall subject to the Empty Category Principle. This group includes empty categories like those in (30)-(33) which are associated with question words. For extensive discussion of the ECP, see Chomsky (1981), Kayne (1981), Huang (1982), and Lasnik and Saito (1984).
14. *What* may in addition be antecedent governed by the trace of successive cyclic movement *t'* in the embedded COMP.
15. Rice (forthcoming) proposes a different analysis of Slave questions, according to which argument fronted questions are produced by base generation but adjunct fronted questions are produced by movement. Her account does not depend on the ECP to explain the ungrammaticality of (33), but on another principle of government-binding theory, Subjacency. See Rice (forthcoming) for discussion.
16. It is an assumption of government-binding theory that question words *in situ* are moved in the Logical Form component to a position c-commanding the material over which they have scope. Assuming that the ECP is relevant also for Logical Form, it would be predicted that adjunct *in situ* questions would also be ungrammatical, through a violation of the ECP by the trace of the LF

movement of the adjunct, unless this movement of question words is done successive cyclically.

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Why There is Nothing Missing in Navajo Relative Clauses¹

MaryAnn Willie

Previous work on relative clauses in Navajo has been concerned with the problem of so-called "missing" nominals in complex sentences.² I will present here a different analysis of the syntactic structure of Navajo relative clauses, in which I show that the label "headless", as applied to these clauses, is a misnomer, and that no PRO or other empty category need be invoked in the analysis of Navajo sentences where there is no noun phrase associated with a particular clausal argument position. My claim is that the argument array for which the verb is subcategorized need not be represented categorially in surface structure (by NPs or Empty Categories [ECs]), since nominals are not verbal arguments, but optional adjuncts to the person-marking pronominal prefixes in the Navajo verb-postpositional complex. These pronominal elements are obligatorily present in all Navajo clauses and serve as verbal arguments. The analysis is based on that of Hale (1983), Jelinek (1984, 1985) and that of Sandoval and Jelinek (this volume). Hale proposes that the reason that nominals are optional in Navajo sentences is that the pronominal prefixes give information on the person and number of the verbal arguments present in lexical structure. The view subscribed to here is that the pronominal prefixes *are* the verbal arguments, so that all arguments are present in both lexical and surface structure, even in the absence of nominals.

The Extended Projection Principle (Chomsky, 1982) requires that the theta-marking properties of each lexical item be categorially represented at each syntactic level, and requires that every clause have a subject. I am suggesting that the Projection Principle applies in Navajo with respect to the

pronominal prefixes, not with respect to the nominals (free lexical items). Navajo is, therefore, a Pronominal Argument language, in contrast to Lexical Argument languages such as English (see Jelinek, 1985).

In order to understand the constituent structure of relative clauses in Navajo, we will need to look first at the structure of simple (one-clause) sentences in the language.

1. The Navajo main clause

A Navajo sentence consists minimally of a single word: a verb stem, classifier, and one or more prefixes. The stem is at the rightmost end, preceded by the classifier. There are four of these: *l*, *ɬ*, *d*, and ZERO. The classifiers may be associated with voice distinctions (active, passive, causative, etc.). Immediately preceding the classifier is the subject prefix. Intervening between subject and object positions are various prefixes marking mode, aspect, and tense. Since my intent is to show the relative position of the subject and object prefixes, I will concentrate on these two positions and mention others only when needed for explanatory purposes.³ I will refer to the stem as the base, and the inflected verb as the verb form. (See Stanley, 1969; Kari, 1976).

The verb form functions as a complete sentence, since it shows the person and the number of the verbal arguments. In the following examples, the person/number marking given in the gloss of an intransitive item indicates the morpheme in subject position of the verb complex. The gloss of a transitive verb is to be read as follows: the first person/number marking specifies features of the Object, and the second specifies features of the Subject.

- | | |
|--|--|
| (1) <i>nidloh</i>
2sS:laugh
You laugh. | (2) <i>yiztał</i>
3sO:3sS:kicked
He/she kicked him/her/it. |
|--|--|

There are five prefixes that mark the subject arguments (Kari 1976:21). Below are examples of these, using the intransitive verb *dloh* 'laugh.'

- | | | |
|--|--|--|
| (3) <i>yishdloh</i>
1sS:laugh
I laugh. | (4) <i>nidloh</i>
2sS:laugh
You laugh. | (5) <i>yidloh</i>
3sS:laugh
He/she laughs. |
| (6) <i>yiidloh</i>
1dualS:laugh
We laugh | (7) <i>'ohdloh</i>
2dualS:laugh
You two laugh. | |

The prefix *daa* is used to pluralize first person dual, second person dual and third person. An example is:⁴

- (8) *deidloh*
 1p1S:laugh
 We (three or more) laugh.

There are six direct object markers. Examples with the verb *dleesh* 'to paint' are:

- | | |
|---|--|
| (9) <i>nishdleesh</i>
2sO:1sS:paint
I am painting you. | (10) <i>shinidleesh</i>
1sO:2sS:paint
You are painting me. |
| (11) <i>nihishdleesh</i>
2dO:1sS:paint
I am painting both of you. | |

In the third person singular there is an alternation between the prefixes *yi-* and *bi-*.

- (12) yidleesh
3sO:3sS:paint
He/she is painting someone or something.
- (13) bidleesh
bi:paint
He/she is being painted by someone.

The *yi-/bi-* pronominal prefixes shown in (12,13) appear only in transitive sentences with all third person arguments. The *bi-* prefix marks a construction as *inverse*. That is, the usual link between the transitive subject and the θ -role *agent* is reversed. In the *bi-* construction, an argument with the thematic role of *patient* has the grammatical relation of Subject. There is a second direct argument, a non-Subject (and non-Object) argument with the θ -role of *agent*. (See Hockett 1966 for a discussion of inverse constructions in Algonquian, and Jelinek 1985 for the association between inverse systems and pronominal arguments).

Completing the paradigm of object pronominals are the reflexive and reciprocal elements:

- (14) 'adidleesh
REFLEX:3sS:paint
He/she is painting himself/herself.
- (15) 'ahodleesh
RECIP:3dS:paint
They (two) are painting each other.

To summarize:

(16)	OBJECT	SUBJECT
1sg.	shi	sh
2sg.	ni	ni
1dual	nihi	iid
3sg.		oh
recip	yi/bi	Ø
reflex	adi	

2. Navajo as a pronominal argument language

The traditional analysis of Navajo syntax (Hale 1973; Perkins 1978; Platero 1974) has been based on the assumption that the nouns adjoined to the verbal complex are the verbal arguments; that is, on the assumption that Navajo, like English, is a Lexical Argument language. This assumption underlies analyses that refer to "missing" nominals, PRO or other empty categories, etc. In this section, I outline briefly some arguments against there being "missing" nominals in Navajo sentences; see Sandoval and Jelinek (this volume) for more detail on this question. One argument against an analysis that assumes "missing" nominals is the fact that Navajo nouns, including independent pronouns, are not marked for case, and generally do not show number distinctions. In languages where "pro-drop" is said to occur, there is agreement in case and in number between the verb and noun(s). This agreement licenses the "dropping" of nominals whose features are specified in the agreement morphology (see discussion in Chomsky 1982). In Navajo, agreement features are not marked on nouns, suggesting that "pro-drop" does not account for "missing" nominals.

A second reason for proposing that independent pronouns have not been "dropped" from Navajo sentences is the fact that in the atypical constructions where independent pronouns do appear, they have a specialized function. Compare:⁵

- | | |
|---|--|
| (17) Yishááł.
yi:1sg:walking
I am walking. | (18) Shi yishááł.
I yi:1sg:walking
I am walking. |
| (19) Yiit'ash.
yi:1dual:walking
We are walking. | (20) Nihi yiit'ash.
1dual yi:1dual:walking
We are walking. |

Examples (17) and (19) are complete sentences: independent pronouns are added only for emphatic contrast in (18) and (20).

A third argument in support of the claim that nouns are optional adjuncts in Navajo is the fact that there are also certain verbs referring to the weather, etc., that do not permit independent pronouns or other nominal adjuncts. If nouns were arguments, we would expect that all verbs would require nouns as arguments. The main body of this paper, Sections 3-5 below, will be devoted to showing other constraints on nominal adjunction in Navajo.

If nominals are indeed optional adjuncts in all clauses, then a noun cannot serve as the head of a relative clause, as previous investigators have assumed. I turn now to a discussion of relative clauses.

3. Relative clause structure

The only required constituents of a Navajo relative clause are the verb and a relativizing enclitic. The relativizers are suffixed to a verb form which then functions as a nominal. Navajo has no independent relative pronouns to serve as complementizers in relative clauses. There are four enclitics which serve as nominalizers and determiners, making a term definite (Young and Morgan, 1980).

- (21)
- | | |
|----------|------------------------------------|
| a) -í | the one |
| b) -ígíí | that which, the one who |
| c) -íí | the particular one |
| d) -éé | the aforementioned one, the former |

The enclitics (21a,b,c) serve to form nouns from verbs, and (21 b,d) enter into the construction of relative clauses. (21d) is customarily used to refer to deceased individuals. The following is an example of a so-called "headless" relative clause:

- (22) nahachagíí t'óó 'ahoyóí
 3S:hopping:REL too many
 There are too many grasshoppers. (Literally: "ones who hop")

Here we see the verb form *nahacha* "hop" made into a relative clause by adding *-ígíí* to give an expression "ones who hop" that can be used to refer to grasshoppers, or to speak humorously of a child with much energy. (The *na-* is an adverbial prefix and the *-ha* marks the action as repetitive).

The examples from this point on will concentrate on the relative enclitic *-éé* for simplicity in exposition, because using only one enclitic allows focus on syntactic structure rather than semantic interpretation. In contrast to previous analyses, I claim that the head of the relative clause is the enclitic (e.g. *-éé*), and not a lexical NP, since the NPs are optional while the enclitic is necessary to relativization. Thus, a Navajo relative clause without an NP, as in (22), is not "headless." The enclitic takes a sentence and turns it into a referring expression, a nominal.

Navajo relative clauses may be described as subject-centered, agent-centered, or patient-centered (Jelinek and Demers, 1985). Intransitive relative clauses may be described as *subject-centered*, since they are coreferential with the

subject argument of the relativized verb, whatever its thematic (θ) role may be.

- (23) a) *yááłti'* He spoke.
 b) *yááłti'yéę* the one [such that] he spoke
 c) *'ashkii yááłti'yéę* the boy - the one such that he spoke

The head of a restrictive relative clause must be a third person argument; it cannot be a first or second person argument. When a nominal is adjoined, it must be coreferential with the third person head.

There are two kinds of transitive relative clauses in Navajo, *agent-centered* and *patient-centered*.

- (24) a) *shizts'qs* He kissed me.
 b) *shizts'qsyéę* the one such that he kissed me
 c) *'ashkii shizts'qsyéę* the boy + the one such that he kissed me

Example (24) shows an agent centered relative, where the clause as a whole is coreferential with the third person *agent* (subject) argument of the verb. The nominal adjunct is coindexed with this agent.

Example (25) shows a patient-centered relative.

- (25) a) *sáts'qs* I kissed him.
 b) *sáts'qsyéę* the one such that I kissed him
 c) *'ashkii sáts'qsyéę* the boy + the one such that I kissed him

This relative is coreferential with the patient (object) argument of the verb. The adjoined nominal is also coindexed with the patient.

Examples (24) and (25) contain a first person pronominal argument and a third person pronominal argument. In sentences with all third person arguments, *either* argument may be relativized, regardless of its θ -role. Navajo uses the *yi-/bi-* alternation to mark the contrast between agent- and patient-centered relatives with all *third* person arguments.

In Section 1, above, I identified the *bi-* prefix as an *inverse* marker which gives the transitive patient the grammatical relation of subject.

- | | | |
|--------|----------|------------------------|
| (26 a) | yizts'qs | He kissed her. |
| b) | bizts'qs | She was kissed by him. |

In main clauses in Navajo, the *yi-/bi-* alternation operates as follows: a nominal adjunct immediately preceding a verb with the *yi-* prefix is coindexed with the *patient* verbal argument, and a nominal immediately preceding *bi-* is coindexed with the *agent* verbal argument.

- | | | |
|--------|------------------|----------------------------|
| (27 a) | 'at'ééd yizts'qs | He kissed the girl. |
| b) | 'ashkii bizts'qs | She was kissed by the boy. |

Here the subject argument has *no* adjunct.

If there is another, outermost nominal adjunct, it is coindexed with the argument with the opposite thematic role, which is the Subject of the sentence (see Sandoval and Jelinek, this volume). We saw in (23-25) above that relative clauses may contain nominals. The relativizing enclitic builds a referring expression from the *entire* finite clause, the inflected verb and its adjuncts, as follows:

- | | | |
|--------|-----------------------------|-----------------------------|
| (28 a) | yizts'qsyéę | the one who someone kissed |
| b) | 'at'ééd yizts'qsyéę | the one who kissed the girl |
| c) | 'ashkii 'at'ééd yizts'qsyéę | the boy who kissed the girl |

- (30) 'at'ééd danahacha'ée yałtí'
 girl 3sS:was jumping:REL 3sS:speak
 The girl who was jumping around is speaking.
 (The girl - the one who was jumping around - she is speaking.)

Since by definition a relative clause shares an argument with the main clause that it is subordinate to, the nominal 'at'ééd is also coreferential with the single argument of the intransitive main clause verb. However, the nominal may not appear in the main clause instead of the relative clause⁶:

- (31) *danahacha'ée 'at'ééd yałtí'
 3sS:was jumping:REL girl 3sS:speak

The relativizing suffix -ée is the right boundary of the relative clause, and any nominal following it is interpreted as an adjunct to an argument of the main clause, but *not* of the relative clause. Since both the main and subordinate clauses here have a single argument, and those arguments by definition are coreferent, the structure shown in (31) is impossible.

The speaker can choose to add an adjunct to a transitive relative clause.⁷

- (32) 'at'ééd yizts'osyée yałtí'
 girl yi:kissed:REL 3sS:speaks
 The one who kissed the girl is speaking.
 (The one such that he kissed the girl - he is speaking.)

Here also, the adjunct cannot follow the relative clause, because the main clause verb is intransitive, and cannot have an argument that is not coreferential with an argument of the relative clause.

- (33) *yizts'ɔsyɛɛ 'at'ééd yaɬtí'
 yi:kissed:REL girl 3sS:speak

In the next example, (34), the *yi-* prefix on the relativized verb has been replaced by *bi-*.

- (34) 'at'ééd bizts'ɔsyɛɛ yaɬtí'
 girl *bi-*kissed:REL 3sS:speak
 The one who was kissed by the girl is speaking.
 (The one such that the girl kissed him + he is speaking.)

As in (31, 32), the adjunct '*at'ééd* cannot follow the relative clause. '*At'ééd* cannot be an adjunct to the main clause verb, because it is not coreferential with the single argument of the main clause verb:

- (35) *bizts'ɔsyɛɛ 'at'ééd yaɬtí'
 *bi-*kissed:REL girl 3sS:speak

In (34), it is not the girl who is speaking, it is the one she kissed.

In (32,34) there is only one adjunct to the relative clause verb, so there is no adjunct to the subject argument of that verb. The whole complex relative clause, with its nominal, forms an adjunct to the single argument of the intransitive main clause verb. Compare the glosses:

- (32) The one who kissed the girl is speaking.

- (34) The one who was kissed by the girl is speaking.

The main and relative clauses share the same subject, and that subject is not identified by a simple noun adjunct within the relative clause. The speaker can, if he chooses, add an adjunct to the subject argument of the relative clause verb.

- (36) 'ashkii 'at'ééd yizts'qsyéé yaʔtʃ
 boy girl yi-:kissed:REL 3sS:speak
 The boy who kissed the girl is speaking.

Making use of the *bi-* prefix in the relative clause, we can invert the order of the nominal adjuncts; then the relative clause will still describe, internally, the same event in the world-- but *reference* will be made to the *patient*, not the *agent*, argument of the relative clause:

- (37) 'at'ééd 'ashkii bizts'qsyéé yaʔtʃ
 girl boy bi-:kissed:REL 3sS:speak
 The girl who was kissed by the boy is speaking.

The relative clause with *bi-* refers to the patient argument of the relativized verb in (34) and (37). This patient is the Subject of the relative clause, and the entire relative clause is an adjunct to the Subject argument of the main clause. Neither 'at'ééd nor 'ashkii can follow the relative clause, since neither is an adjunct to an argument of the main clause verb that is not coreferential with an argument of the relative clause.

When both the main and relative clause verbs are transitive, it is possible to have an adjunct that follows the relative clause, an adjunct to an argument of the main clause verb that is not coreferential with an argument of the relative clause verb.

- (38) a) 'ashkii 'at'ééd yizts'qsyéé diné yiyiĩtsá
 boy girl yi-:kissed:REL man yi-:saw
 The boy who kissed the girl saw the man.
 b) 'ashkii 'at'ééd bizts'qsyéé diné yiyiĩtsá
 boy girl bi-:kissed:REL man yi-:saw
 The boy who was kissed by the girl saw the man.

In (38), the relative clause is coindexed with the agent argument of the main clause, and *diné* is coindexed with the patient argument. Within the relative clause, the *yi-/bi-* alternation marks a change in the thematic role of the Subject of the relative clause. In both (38a, 38b), the Subjects of the two clauses are coreferential.

It is also possible, in a highly marked construction, to have three adjuncts preceding the relative clause verb, when the first of these is an adjunct to an argument of the main clause verb that is not coreferential with some argument of the relative clause verb.

- (39 a) *diné 'ashkii 'at'ééd yizts'qséq yiyiĩtsá*
 man boy girl *yi-:kissed:REL yi-:saw*
 The man saw the boy who kissed the girl.
 b) *diné 'ashkii 'at'ééd yizts'qséq biĩtsá*
 man boy girl *yi-:kissed:REL bi-:kissed*
 The man was seen by the boy who kissed the girl.

In (39), the first nominal is outside the relative clause, and is an adjunct to the Subject argument of the main clause verb. The *yi-/bi-* alternation marks a change in the thematic role of the Subject *diné*, and the relative clause is an adjunct to the non-Subject argument of the main clause verb. In (39a, 39b), the Subjects of the main and relative clauses are not coreferential.

We have seen that we cannot add an adjunct after the relative clause *unless* it is an adjunct to a main clause argument that is not coreferential with an argument of the relative clause. Adjuncts that precede the relative clause are also excluded if they are coreferential with an argument of the relative clause.

- (40 a) **'ashkii 'ashkii 'at'ééd yiyiĩtsánéq yizts'qs*
 b) **'ashkii 'ashkii 'at'ééd biĩtsánéq yizts'qs*

The construal of sentences with relative clauses depends upon coreference between the verbal arguments (pronominal prefixes) across clauses. Note that it is coreference between the nominal adjuncts that is excluded. We can generalize as follows:

- (41) In complex sentences, the verb in each clause may optionally have as many adjuncts as it has arguments; however, coreferential adjuncts in main and relative clauses are excluded.

At first glance, this constraint appears to be parallel to the phenomena of deletion under identity in a lexical argument language such as English. However, the situation in Navajo is different in two respects:

- (42) a) It applies to adjuncts, not the verbal arguments.
 b) Nominals may be excluded in either the main or relative clause, when coreference is present.

While (42a) is a theory-internal claim, the observation stated in (42b) constitutes a crucial difference between the syntax of Navajo and English, and provides important support for the claim that Navajo is a Pronominal Argument language. Example sentences demonstrating (42b) include (31), (33), (35), and (40); more will be given in the next section.

The constraint given in (41) is a corollary of a more general constraint, one that applies to all Navajo sentences, simple as well as complex:

- (43) Disjoint nominal adjuncts must be disjoint in reference.

This constraint of course does not apply to nominals that are included within other nominals, where coreference is necessary, as in a relative clause that includes a nominal with which the clause as a whole is coreferent. In example, (30) above, repeated here:

The single exception to (43) is the set of emphatic reflexive independent pronouns, as in:

- Also, since all nominal adjuncts must be coreferential with a verbal argument, (43) rules out:

- Since *'ashkii* and *'at'ééd* here would both have to be coreferential with the single argument of the intransitive verb, they would also be coreferential with each other. The constraint stated in (43) also rules out:

- while permitting (47) if two people with the same name are referred to.

- The interpretation of sentences with relative clauses in Navajo is based upon coreferentiality of pronominal arguments, since

a relative clause shares an argument with the main clause. But coreference of nominal adjuncts within such a sentence is excluded, just as it is in simple sentences. In the next section, we will look at some sentences where nominals are "missing" in the main clause, not the relative clause, as noted in (42b), and point out the problems that this presents for an analysis of Navajo as a lexical argument language, where nominals would be classed as arguments.

5. Adjunction and Ambiguity in Navajo Sentences

The fact that nominals are optional results in sentences that are ambiguous, according to where the hearer takes the adjuncts to appear. The string

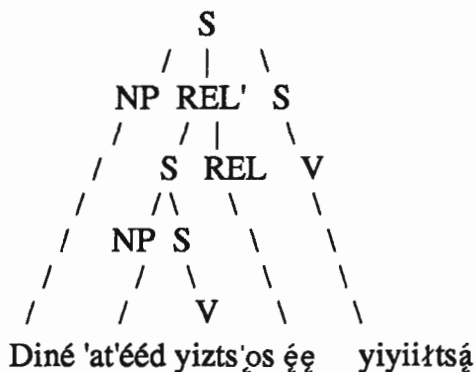
(48) *diné 'at'ééd yizts'oséę yiyiiłtsá*

has the following meanings:

- (48 a) The man saw the one who kissed the girl.
- b) The man saw the girl he kissed.
- c) Someone saw the man who kissed the girl.

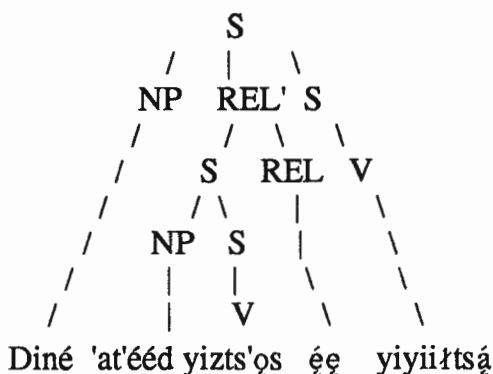
The following tree diagrams correspond to the readings of (48).

- (48 a) The man saw the one who kissed the girl.
- b) The man saw the girl he kissed.



On the (a) reading, the NP *diné* is an adjunct to the agent argument of the main clause verb, and the relative clause is an adjunct to the patient argument. There is no nominal adjunct to the agent argument of the relative clause verb, so that it is unspecified, "the one who...". On the (b) reading, the interpretation is that the nominal *diné* was excluded in the relative clause, because it is coreferential with the agent argument of the main clause. In contrast, the following tree shows the (c) reading, where *diné* is an adjunct to the relative clause verb, and there is no adjunct to the main clause agent argument.

(48 c) Someone saw the man who kissed the girl.



There are discontinuous negative particles in Navajo, *doo...da*, that bracket the material under their scope. The following examples show negative versions of the (a) and (c) readings of (48) and lend support to the analysis proposed here.

- (49) a) The man saw the one who kissed the girl.
 The man saw the one who didn't kiss the girl.
 (diné) (doo 'at'ééd yizts'qs dayéę) yiyiitsá
- b) The man saw the girl he kissed.
 The man saw the girl he didn't kiss.
 (diné) ('at'ééd doo yizts'qs dayéę) yiyiitsá
- c) Someone saw the man who kissed the girl.
 Someone saw the man who didn't kiss the girl.
 (diné doo 'at'ééd yizts'qs dayéę) yiyiitsá

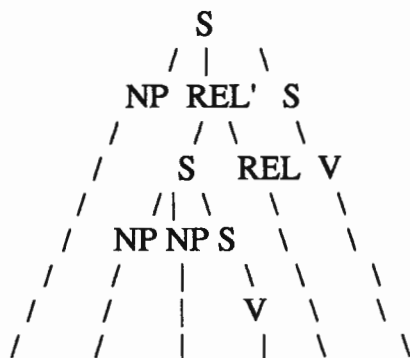
In (49b), the negative particles bracket only the relative clause verb, while in (49a,c) they bracket the verb and the adjunct to the patient argument of the relativized verb.

In example (39) above we saw a complex sentence with three nominal adjuncts, where the first nominal was an adjunct to the main clause verb. The following example is parallel:

- (50) 'Ashkii diné 'at'ééd yizts'qséę yiyiitsá
 The boy saw the man who kissed the girl.

Since all the optional NPs have been adjoined, this sentence is not ambiguous.

(50)



'Ashkii diné 'at'ééd yizts'oséę yiyiiłtsá

Since *diné* and *'ashkii* are not coreferential, they may both appear in the structure.

In the corresponding *bi*-construction, without a third nominal, the sentence is again ambiguous.

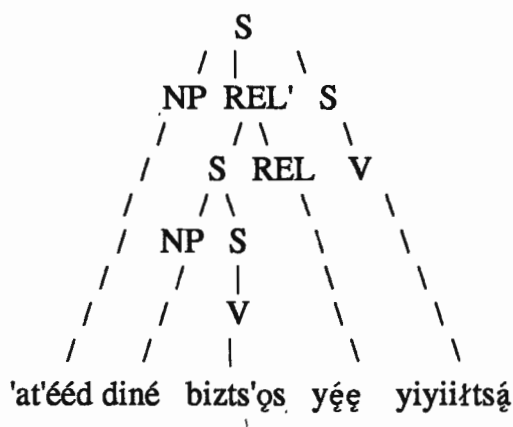
(51) 'At'ééd diné bizts'oséę yiyiiłtsá.

The readings are:

- (51) a) The girl saw the one the man kissed.
 b) The girl saw the man who kissed her.
 c) Someone saw the girl the man kissed.

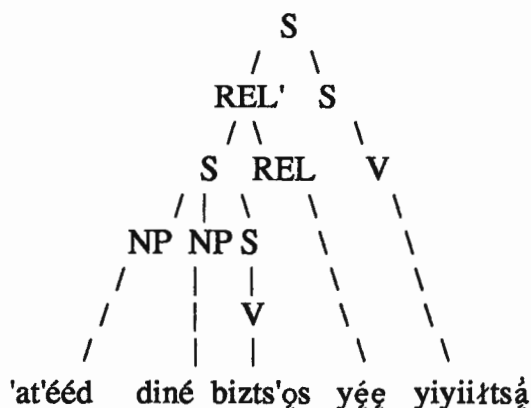
The structures are the same as for (48), since the only change is in the *bi*- prefix on the relativized verb.

- (51) a) The girl saw the one the man kissed.
 b) The girl saw the man who kissed her.



On the (a) reading, the adjunct *'at'ééd* is attached to the main clause, and there is no adjunct to the Subject argument of the relative clause. On the (b) reading, the hearer infers that the nominal *'at'ééd* was excluded in the relative clause, because it is present in the main clause.

(51 c) Someone saw the girl the man kissed.



On the (c) reading, the leftmost nominal is taken as an adjunct to the Subject argument of the relative clause, and there is no adjunct to the main clause Subject argument.

If we change the main clause verb form from *yiyiiłtsá* to *biiłtsá*, and leave the *yi-* prefix on the relative clause verb, the three readings are as follows:

- (52) 'at'ééd diné yizts'osyéę biiłtsá
- a) The girl was seen by the one who kissed the man.
 - b) The girl was seen by the man she kissed.
 - c) Someone was seen by the girl who kissed the man.

Again, the structures are the same as for (48) and (51). On the (a) and (b) readings, the leftmost adjunct is attached to the main clause, and the contrast lies in whether the hearer assumes that a coreferential nominal 'at'ééd has been excluded from the relative clause. On the (c) reading, all adjuncts are taken to be included in the relative clause. The contrast involved in all of these sets of possible interpretations is whether or not the first nominal is taken to be an adjunct of the main clause or the relative clause verb. The *yi-/bi-* alternation on the relativized verb determines whether the preceding nominal can be interpreted as an adjunct to the agent or patient argument of the relativized verb, while the *yi-/bi-* alternation on the main clause verb determines whether the relative clause is to be interpreted as an adjunct of the agent or patient argument of the main clause verb. A sentence initial NP can be interpreted as an adjunct of either clause; thus the ambiguity seen in the readings of (48, 51, 52). When no adjuncts are present, as in (24), or when all the permitted adjuncts are present, as in (50), no ambiguity occurs. However, sentences with more than one adjunct are quite infrequent in actual usage.⁸

In (38) above, we saw that a nominal may follow the relative clause, when it must be interpreted as an adjunct to the non- subject argument of the main clause verb. The following example is parallel.

- (53) a) Yizts'qséé 'ashkii yiyiíłtsá.
The one who was kissed saw the boy.
b) 'At'ééd yizts'qséé 'ashkii yiyiíłtsá.
The one who kissed the girl saw the boy.
c) Diné 'at'ééd yizts'qséé 'ashkii yiyiíłtsá.
The man who kissed the girl saw the boy.

In the above examples, the relative clause and whatever nominal adjuncts it includes form an adjunct to the agent argument of the main clause verb, since the main clause verb has *yi-*, and *ashkii* is present.

- (53 c)



If the *bi-* prefix is present on the main clause verb, the nominal immediately preceding it must be interpreted as an adjunct to the agent argument of that verb.

- (54) Yizts'oséę 'ashkii biiłtsá.
The one who was kissed was seen by the boy.

Note that no ambiguity is present with respect to a nominal following the relative clause, no matter how few adjuncts to the relative clause verb are present.

The presence of a temporal adverb can also reduce or eliminate ambiguity in certain contexts.⁹ The following example and comment are taken from Platero (1982, p. 304):

- (55) 'adââdââ 'ashkii 'at'ééd yiyiiłtsânêę yidoots'os
 yesterday boy girl yi-saw-REL yi-will kiss
 The boy will kiss the girl he saw yesterday.

"Notice that the adverb '*adââdââ*' "yesterday" belongs to the embedded clause since it must go with the perfective verb *yiyiiłtsâ* 'he/she saw him/her.' It would be incompatible with the future tense of the main verb *yidoots'os* 'he/she will kiss him/her.'"

That is, everything in the sentence except the main clause verb is within the scope of the temporal adverb; the main clause verb is excluded from its scope because it refers to a future event.

- (55)
-
- 'adââdââ 'ashkii 'at'ééd yiyiiłtsâ (n) ęę yidoots'os
 The boy who saw the girl yesterday, he will kiss her.

This sentence is crucial evidence for the analysis given here. Because '*adââdââ*' precedes '*ashkii*', '*ashkii*' cannot be a constituent of the main clause; it is "trapped" in the relative

clause, since the temporal adverb has scope over all the sentence except the final matrix verb. If we assume a *pro* head of the relative clause as a constituent of the main clause, this *pro* would c-command 'ashkii in the relative clause, and we would have a violation of condition C of the Binding Conditions (Chomsky 1981). When we recognize the pronominal prefixes as the clausal arguments, these problems do not arise. The Subject arguments of the main and relative clauses are coreferential, and 'ashkii may be adjoined only once. It cannot follow the relative clause, since it is not coreferential with a non-Subject argument of the main clause. And it cannot precede the relative clause as an adjunct to the main clause verb (whereupon it could not be adjoined again in the relative clause) because of the presence of 'adā́dā́. But there are no "missing" nominals, and no Empty Categories in either clause, since it is the pronominal prefixes, not free nominals, that serve as the clausal arguments.

6. The "fourth" person and the exclusion of nominal adjuncts

I have argued that nominals are not verbal arguments, but optional adjuncts, and that there are constraints upon nominal adjunction. In this section, we will look at a class of pronominal arguments that exclude nominal adjunction; this is further proof of the non-argumental status of nominals. We have seen that a transitive verb permits two adjuncts:

- | | | | |
|--------|---------------------|----|----------------------------|
| (56 a) | Tom diné yiztał | b) | Tom diné biztał |
| | man yi:-kicked | | man bi:-kicked |
| | Tom kicked the man. | | Tom got kicked by the man. |

Navajo also has "fourth" person pronouns used to refer to a particular "faceless" (known but undescribed) referent. The prefix *ji-* is the fourth person equivalent of *yi-* and the prefix *ho-* is the fourth person equivalent of *bi-*.

- | | | | |
|--------|------------------------|----|---------------------------|
| (57 a) | diné yiztał | b) | diné biztał |
| | man <i>yi-</i> :kicked | | man <i>bi-</i> :kicked |
| | He kicked the man. | | He got kicked by the man. |

- | | | | |
|--------|------------------------|----|------------------------|
| (58 a) | diné jiztał | b) | diné hwiztał |
| | man <i>ji-</i> :kicked | | man <i>ho-</i> :kicked |
| | The (unnamed) person | | The (unnamed) person |
| | kicked the man | | got kicked by the man |

That is, the *ji-* prefix, like the *yi-* prefix, marks an immediately preceding nominal as patient, and the *ho-* prefix, like the *bi-* prefix, marks an immediately preceding nominal as agent.

However, there is an important difference between the *yi-/bi-* forms and the corresponding fourth person forms. The fourth person forms are so highly referential that they *exclude* a nominal adjunct in the sentence.

- | | | | |
|--------|------------------------|----|------------------------|
| (59 a) | *Tom diné jiztał | b) | *Tom diné hwiztał |
| | man <i>ji-</i> :kicked | | man <i>ho-</i> :kicked |

Only after a long pause could a nominal be considered as coreferential with the fourth person forms.

- | | | | |
|--------|-------------------|----|-----------------------|
| (60 a) | Tom...diné jiztał | b) | Tom...diné hwiztał |
| | Tom...that person | | Tom...that person got |
| | kicked the man | | kicked by the man |

It appears that *ji-* is an agent pronoun that permits no adjuncts, and that *ho-* is a patient pronoun that permits no adjuncts. This lends support to the view that pronominal prefixes serve as arguments in Navajo.

7. Concluding Remarks

I have attempted to show, descriptively, that nominals are not verbal arguments, but are optional adjuncts to the verbal sentence. Navajo is a Pronominal Argument language; that is, arguments are restricted to the set of pronominal prefixes found in the postpositional-verbal complex. There are no non-finite verb forms in Navajo; the verb and postposition are always inflected for the arguments they are subcategorized for. There are constraints on the occurrence of the independent pronouns, and certain verbs exclude nominal adjuncts.¹⁰ The "fourth" person forms also exclude nominal adjuncts. I have argued that the head of the Navajo relative clause is the relativizing suffix on the verb, and that nominals are not required constituents of relative clauses. Therefore, there is nothing "missing" from Navajo relative clauses, and the term "headless" as applied to these clauses is a misnomer.

I have proposed a constraint upon nominal adjuncts, as follows:

- (43) Disjoint nominal adjuncts must be disjoint in reference.

This constraint does not apply to the pronominal verbal arguments, where coreferentiality is necessary to the interpretation of multi-clause sentences. Navajo differs sharply from English in that where nominals are excluded because of coreference, they may be excluded from the main clause rather than the subordinate relative clause. This is one of the many aspects of the syntax of Navajo that follow from its status as a Pronominal Argument language.

Notes

1. I am indebted to Eloise Jelinek in helping me with the analysis. Helpful comments from Ken Hale, Susan Steele, Ann Farmer, Dick Demers, Dick Oehrle, and Dave Lebeaux were welcomed. The analysis presented is based on my own speech. For loving encouragement I thank my son, Raymond Havatone.
2. See especially the work of Platero (1974, 1978, 1982) and Perkins (1982).
3. Kari (1976) gives an excellent analysis of the prefix positions in the Navajo verb and the pronominal elements that appear there. See also Young and Morgan (1980).
4. The change in the shape of the prefix *daa-* in the form *deidlo* is an example of the operation of the phonological rules that apply in the Navajo verb prefix morphology. These rules will not be discussed here. (See Kari 1976).
5. The *yi-* prefix that appears in examples (17-20) is not the third person marker. It is a phonologically conditioned element, the "*yi-peg*." (See Young and Morgan 1981.)
6. Platero (1978) holds the view that a nominal can follow the relativized verb and still be within the relative clause, producing a "head final" construction. This is not possible in my speech. I interpret such strings as consisting of two adjuncts -- a relative clause followed by a simple nominal adjunct, in an "afterthought" construction:

i) yizts'qsyéé... 'at'ééd... yałtí'

The one who was kissed...the girl...is speaking.

But notice that the subject of the clause is not the same as when a relative with an included adjunct is present:

ii) 'at'ééd yizts'qsyéé yałtí'

The one who kissed the girl is speaking.

7. I also do not share the view of Platero that relative clauses with two nominal adjuncts are ambiguous, so that either nominal can be taken as head of the relative clause.
8. After becoming aware of the status of Navajo as a pronominal argument language, I recently spent some time again in a community of native speakers of the language, and was very much impressed with the low frequency of nominals in actual conversation.
9. I am grateful to Ken Hale for bringing this fact to my attention.
10. There are also "impersonal" subject and object pronouns that exclude nominal adjuncts (Willie, in preparation).

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Cohesion and Discourse Structure in Three Genres of Navajo Discourse

Lynn McCreedy

Recent studies in discourse analysis have produced many insights into the nature of text. Text unity, particularly in narratives, has been approached from several levels of analytical focus: that of the overall discourse structure, that of the component parts of discourse structure, and that of the discourse's cohesion, or referential continuity. The relationship between cohesion and discourse structure is subject to debate. Halliday & Hasan (1976:7-8,10) claim that cohesion operates independently of all structure, including that of the discourse. Evidence against their claim is provided by work by van Dijk (1981), Longacre (1979), Chafe (1980), and others on characteristics of the paragraph and/or episode as a unit of discourse structure, which shows that patterns of reference and conjunction (which Halliday & Hasan 1976 term cohesive) correlate with the discourse structure of stories. Moreover, Halliday & Hasan's statement that there will be more cohesion within paragraphs than between them (Halliday & Hasan 1976:296-297) also suggests that cohesion might be dependent on discourse structure. Because discourse structure is not ad hoc, but proceeds from the communicative functions and topical organization of the discourse, it would seem unlikely that the expression of the continuity of reference within the text (cohesion) could clearly be separable from its functional-semantic organization. The question, then, is whether cohesion's 'independence' is to be understood as an analytical heuristic, or as independence in theoretical principle.

This paper presents a discussion of the correlation between aspects of cohesion and discourse structures in Navajo Coyote

stories, personal narratives and prayers, and analyzes what this evidence says about the status of cohesion as a structure-independent phenomenon.

The database for this study is comprised of texts from three genres, utilizing texts gathered by Haile, Sapir, and Reichard in the 1930s and 1940s. The genres, prayers, personal narratives and Coyote stories were chosen to represent a stylistic range from very formal, or "frozen", to consultative. Prayers and personal narratives contrast markedly in style, prayers being an example of Joos' (1962) "frozen" style, fixed in form, content, and context of use and personal narratives being an example of Joos' "consultative" style in many respects, with form and content to a great extent speaker-determined. Coyote stories fall stylistically between prayers and personal narratives, since their plot outlines are predetermined, but they are not memorized and repeated verbatim, and Joos' category term "formal" could be applied to them, though they are much less solemn than this term might imply. Within each genre, the goal of the study was to examine three or four typical texts, determined as such by the texts' topics and how well they exemplified that genre's structural and stylistic characteristics (in genres with such descriptions).

Prayers have been described as having a structure comprised of an invocation, a petition, and a benediction, with most lines grouped into twos, threes, fours, or larger 'stanzas,' based on syntactic parallelisms (Reichard 1944). The three prayers which were examined for this study are "Prayer for the Doll" (Haile 1947), "Prayer of the First Night Male Shooting Chant Evil" (Reichard 1944), and a prayer from a Beautyway ceremonial (Wyman 1957, recorded by Haile in 1931). All three prayers have the above mentioned characteristics, and because all have a healing/exorcistic function, their content concerns the driving away of evil and illness, and the restoration of health and harmony. Since all three are rather long, but share major structural and functional characteristics, only the "Prayer for the Doll" will receive a detailed discussion of its discourse structure and cohesion.

Coyote stories are traditional tales similar to Aesop's Fables in that the main characters are animals or fantastic beings (e.g. giants), and the stories have a moral, though this is generally not explicitly stated as it is at the conclusion of each of Aesop's Fables. The three Coyote stories analyzed for this study are from Sapir's collection (Sapir & Hoijer 1942:16-25): "Horned Toad and His Corn Patch," "Coyote Makes Rain," and "The Giant and the Girl." While only the first two of these have Coyote as a main character, all three have the general 'Aesop-like' characteristics mentioned above, and all three come from a repertoire of tales which would be told on winter evenings to entertain and to impart Navajo values to the children (Lopez 1979; Toelken & Scott 1980). In the present discussion, only "Horned Toad and His Corn Patch" will be examined in detail as a typical Coyote story.

Published texts of Navajo personal narratives are scarce, and data selection for this genre did not involve examining several candidates and choosing typical representatives, but rather simply finding texts in this genre; four were found, and the discourse structure and cohesion of all four will be considered here. This genre has not been previously studied, so there were no specific guidelines concerning genre typicality. The term is Sapir & Hoijer's (1942) designation for two narratives, "The Story of a Navajo Woman Captured by the Utes" (Sapir & Hoijer 1942:334-337), and "A Navajo's Historical Reminiscences" (Sapir & Hoijer 1942:337-397), both of which have been examined for the present study. The latter narrative is too long (30 pages) to be analyzed in its entirety, except on the most general terms, so two excerpts which can be seen as narratives within the larger narrative will be considered. Paragraph 23 in Sapir & Hoijer's rendering, which will be referred to here as "My Father's Dying" (Sapir & Hoijer 1942:354-357), was chosen because it includes the narrator's telling about his father's death, a topic of such emotional import that any formalizing effects of the elicitation situation would be lessened, and speech would be relatively unmonitored (Labov 1966). The second excerpted narrative relates within one (15 sentence) paragraph an incident whose

climax is the harassment of some children by a robber, and the killing of their horse. This is the 16th paragraph in Sapir and Hoijer's rendering of the narrative, and will be referred to here as "The Raider" (Sapir & Hoijer 1942:348-349). The fourth personal narrative is from Reichard's Navajo Grammar, entitled "An Orphan's Story: My Childhood," by Nancy Woodman (Reichard 1951:382-391), a narrative of personal experience reprinted from the Navajo monthly *Adahoniłgíí*.¹

Before describing the discourse structure and cohesion in the four personal narratives, and the representative Coyote story and prayer, the next section of this paper will provide some background on approaches to text unity which have influenced this analysis. Following this, sections 2, 3, and 4 comprise the main focus of the paper: for each of the three genres, the patterns of cohesion and their relationship to discourse structure will be examined. The fifth and final section summarizes the results, and discusses the relationship of cohesion and discourse structure to one another and to style.

1. The Structural Analysis of Texts

1.1 Narrative Structure

In this study, narratives will be described using a synthesis of the models proposed by Labov (Labov & Waletzky 1967; Labov 1981) and Longacre (Longacre 1976a; 1976b). Despite their differing data bases and theoretical perspectives,² both linguists agree on many points. Both see the essential event-relating function of narratives as motivating their general structure: Labov notes that the "objective event sequence" is the "cognitive framework that is a true representation of the narrative" (Labov 1981:231), and Longacre similarly

maintains that "narrowly speaking, plot is the structure of narrative discourse" (Longacre 1976a:304).

The basic points which Labov's and Longacre's descriptions of narrative structure have in common are that narratives have some sort of opening, after which the narrator relates events leading up to the story's climax; the climax is followed by another series of events in the narrative's resolution, and the narrative concludes with a closing section. The specifics of the closing section will vary according to the context of the narration. If it is conversational, the 'coda' section 'returns the verbal perspective to the present moment' (Labov & Waletzky 1967:39); if, however, it is a more conventionalized pre-planned performance of a story (whether written or dramatized), the conclusion will be more formulaic; possibly including some sort of 'finis' (Longacre 1976a; 1976b).

The differences between these two models reflect differences in the data upon which each is based. Labov has worked primarily with narratives of personal experience in the dominant culture and subcultures in the United States. Longacre's data, however, draws primarily from folk tales and other traditional narratives from indigenous groups in the Philippines and South America. These longer, more planned narratives are likely to exhibit the greater sort of complexity which Longacre's model describes: formulaic beginnings and endings, and a more drawn out plot development entailing a series of episodes both before and after the story's climax.

The 'composite' model used in the present study to describe the structure of Navajo Coyote stories and personal narratives is displayed in Figure 1, along with the models of Labov and Longacre from which it is derived. Here again, the differences between this model and the others stem from the specifics of Navajo narratives, especially Coyote stories. In preference to 'aperture' and 'stage', the more general term 'orientation' will be used, because although these narratives often begin formulaically, other orientational information can be included within the formulaic opening. For example,

Coyote stories tend to open with '*alk'idáá*' 'long ago,' also naming the character present in the opening scene, and often also some neutral activity: '*Ałk'idáá ma'ii jooldlosh, jini*' 'Long-ago Coyote was-trotting-along, they-say' (the opening sentence of "Coyote Makes Rain," Sapir & Hoijer 1942:20,21). Labov's terms, 'complication' and 'resolution', are also used, but where appropriate, Longacre's terms are used as subdivisions. So, for example, the episodes in the complication culminate in a peak. Minor differences in the Navajo data have led to a few differences in the descriptive use of terms: the organization of the resolution section seems most appropriately described as analogous to that of the complication; that is, episodes culminate in another peak in the action, and thus the peak' follows rather than precedes the post-peak episodes. Following the post-peak episodes and the peak' is a brief conclusion for which the more general term 'closure' is applicable to most (though not all) of the Navajo data considered here.

This model is not meant to be descriptive of or applicable to *all* Navajo narratives, and we will be considering some interesting structural variations in the personal narratives. However, Coyote stories, and other Navajo narratives in which event-relating is the central means by which the plot moves forward, do exhibit this kind of basic discourse structure relatively clearly.

From the viewpoint of plot development, then, narratives including, but not limited to Coyote stories, are basically organized into episodes which build to a climax in both the complication and the resolution. Within this schema, the *episode* is central to the structure of narratives, and thus merits further consideration.

1.2 Episode and Coherence

Although *episode* and the closely related notion of *paragraph* have been used in the description of narratives (e.g. Chafe

1980; Longacre 1976a, 1976b, 1979), the use of these terms has relied on intuitive notions of their functional-semantic senses, with some discussion (Longacre 1976a:276,291,303) of language specific surface markers of paragraph (and/or episode) boundaries. A thorough and rigorous treatment of the semantics of episodes has been undertaken by van Dijk (1981), and will be reviewed briefly here.

As used by van Dijk, the term *episode* refers to a basic unit in the semantic analysis of (especially) narrative discourse, and can at one level be considered the semantic aspect of the paragraph (van Dijk 1981:177).³ It is a term whose definition proceeds from what characterizes real life episodes: that they are part of a larger whole, that they usually involve sequences of events or actions, and that each episode is relatively unified, having a discernible beginning and end. In discourse, the prototypical episode involves the recapitulation of a real life episode, as, say, a battle in a war, as told in a history text.

Narrative discourses such as history texts, folk tales, or narratives of personal experience can, on a semantic level, be viewed as coherent sequences of propositions, which can be grouped semantically and subsumed under what van Dijk calls a *macroproposition* summarizing their content (van Dijk 1981:180). From this notion van Dijk derives his technical definition of discourse episode as the sequence of propositions subsumable under a macroproposition.

At any point in the discourse at which the coherence shift is of such magnitude that the next proposition cannot reasonably be subsumed under the same macroproposition as the immediately foregoing discourse, a new episode begins. Since macropropositions may themselves be further grouped and subsumed under yet more general macropropositions, episodes can be recognized at several levels of generality between the clause and the entire discourse.

1.3 Cohesion

Cohesion is Halliday & Hasan's (1976) term for the text-unifying effects of referential continuity, mainly as expressed by semantically related lexical items in a text. Cohesion is seen as a nonstructural semantic relation, as, for example, that between a pronoun and its antecedent, "expressing at each stage in the discourse the points of contact with what has gone before" (Halliday & Hasan 1976:299). A *cohesive tie* is the interpretive link between, say, a pronoun and its antecedent, or two coreferential NPs; a series of such ties is termed a *cohesive chain*. Cohesive chains can include verbs and adverbials, as well as nouns and pronouns; referential continuity is not limited to nominals. Although Halliday & Hasan (1976) recognize five categories of cohesion in English,⁴ only two of these, *referential cohesion* and *lexical cohesion*, clearly occur in cohesive chains in Navajo texts, and only these two will be illustrated here. In the examples, items participating in cohesive ties are in boldface type.

1.3.1 Reference

Reference is basically, though not exclusively,⁵ pronominal reference:

- (1) a) **Joan** got in **her** car and started for home. After driving only two miles, **her** car began to sputter and hesitate.
- b) 'At'éédléei'. Jichago, chizh énjiilááh, jiní.
Girl-to. 4**subject**-cry-subordinator, wood 4**subject**-gathered, it-is-said
 '(He spoke) to a **girl**. As **she** wept, **she** gathered wood, it is said.' (Sapir & Hoijer 1942:24,25: "The Giant and the Girl")

1.3.2 Lexical cohesion

Lexical cohesion occurs by either of two means: the first is through repeated reference to a particular object (or action,

attribute, etc.), whether by actual repetition, by synonymy, or by using a more general term (any of these constitute "reiteration" to Halliday & Hasan); the second means of achieving lexical cohesion is through collocation, the use of lexical items that regularly co-occur, such as *tree* and *leaf*, or *red*, *white*, and *blue*. The following examples illustrate lexical cohesion:

(2 a) I met Charlie's **son** yesterday. That **kid** is a real whirlwind!

b) Though he doesn't attend **church** regularly, Joe considers himself to be a **Methodist**.

c) Nikee' nighéé'ii bee shich'áá' ndidíídaáʔ

Nijáád nighéé'ii díí bee shich'áá' ndidíídaáʔ

2poss.-feet which-are-strong (lit. 'awful') these by-means-of in-front-of-me you-will-rise-up

2 poss.-legs which-are-sturdy (lit. 'awful') these by-means-of in-front-of-me you-will-rise-up

'With **your** strong **feet** rise up to protect me.

With **your** sturdy **legs** rise up to protect me.'

(Reichard 1944:58: "Prayer of the First Night Male Shooting Chant Evil")

1.4 Summary

Insights from all of the approaches to text unity which have been reviewed here have been used in the present examination of text unity in Navajo prayers, Coyote stories, and personal narratives. Narrative structure will be described in terms from Labov (Labov & Waletzky 1967; Labov 1981) and Longacre (1976a, b), and in all three genres, discourse structural boundaries are seen as reflecting coherence shifts (van Dijk 1981). On the lexical/referential level, certain aspects of Halliday & Hasan's (1976) work on cohesion are the basis of

the analysis of Navajo referential patterns across all three genres.

2. Cohesion and discourse Structure in Coyote Stories

2.1 "Horned Toad and His Corn Patch": Discourse Structure and Cohesion

To the extent that Coyote stories are narratives about the adventures of a principal character, Coyote, their narrative structure is like that of other plot-centered narratives, opening with an orientation, proceeding with one or more episodes leading up to a most important act or event, which is followed by episodes in the resolution or denouement, and the story is ended with a closure and optionally also a formulaic *finis*. Following van Dijk, an episode is seen as comprised of a sequence of semantically related, or coherent propositions, whose content may be summarized by a macroproposition. Shifts in coherence relations, signalled by markers of a change in time, characters, or action indicate the beginning of a new episode. The social function of Coyote stories in teaching children Navajo values also has an effect on their structure: in the story presented here (and in many others), Coyote is an example of how not to be; the 'peak' of the complicating action is a wrong act by Coyote, and Coyote's 'come-uppance' is built up to in the 'post-peak' or 'resolution' section. Coyote stories are essentially performances, and this too affects their structure in that it leads to rhythmicity, which is expressed by the regularly recurring *jini* 'it is said,' and by the use of syntactic parallelism. This in itself has an aesthetic (audience pleasing) value, and serves also as a mnemonic device.

Figure 2 coordinates the lines from the Coyote story "Horned Toad and His Corn Patch" with the story's discourse structure, and also its patterns of lexical, referential, and

conjunctive cohesion. The story opens with a two-clause orientation. Before the main action of the story begins, Horned Toad has planted corn, and things have ripened. Next come the two episodes of the complication: in the first episode, sentences 2 through 5, Coyote visits Horned Toad, and enjoys the corn Horned Toad roasts for him. In the second episode, sentences 6 through 8, Coyote pays another visit, but instead of eating the corn again prepared for him, he swallows Horned Toad. This is the peak of the complicating action, Coyote's damning wrongdoing in this tale. Sentence 9, 'then, it seems, Coyote began to run,' does not seem to fit into either the 2nd or 3rd episode, in terms of the coherence criterion, since it cannot be fit into the macroproposition summarizing either one. Rather, it seems to exhibit what Chafe (1980:40-47) calls the "temporal elasticity" of a purely transitional action taking an indeterminate amount of time, and serving as a 'valley' between two 'peaks' in the action. The third episode begins the sequence of events culminating in Coyote's undoing: Horned Toad touches Coyote's heart, and Coyote warns him to keep away from it. The fourth episode, comprised of sentences 12 through 15, is the crucial counter-act to Coyote's bad deed of episode 2: Horned Toad finds and cuts Coyote's windpipe. The main clause of sentence 16, 'From his inside, Horned Toad crawled out again,' functions as a closure to the narrative; Horned Toad is alone and safe, as at the story's beginning.

Inter-sentence continuity in this text is accomplished by referential and lexical cohesion, and is the cumulative effect of specific cohesive "ties," such as the use of third person reference in sentence 3, coreferential with *ma'ii* 'Coyote' in sentence 2, or for example the chain of lexical cohesion in the repetition of 'run' in sentences 2, 5, 6, and 9.

Chains of lexical cohesion coordinate with the discourse structure of this narrative in a straightforward way. As Figure 2 shows, although the chains do cross episode boundaries, they are essentially located within either the complication or the resolution, and the transition between those two sections, sentence 9, contains only a single lexical tie. Because the cast

in "Horned Toad and His Corn Patch" has only two characters, and Navajo has four pronominal categories for referring to animate third persons (3, 3', 3indef, and 4),⁶ unambiguous reference can be maintained anaphorically throughout the narrative, and these two cohesive chains thus serve an overall unifying function. Note that the only non-introductory instance of a noun for either character occurs at the beginning of the closure section, where Coyote's name bears the suffix *-ee* which is often glossed 'aforementioned' or 'past,' but (following analysis by Toelken & Scott 1980) here probably connotes 'dead' or 'cursed' as well.

2.2 Temporal Conjunctions *Aádóó* and *Nt'ée'*

Halliday & Hasan would consider the temporal conjunctions '*áádóó* and *nt'ée'*', both glossed 'and then,' to be instances of conjunctive cohesion. However, the status of conjunction as a cohesive category is problematic. Unlike the other four types of cohesion, the conjunction does not encode continuity of reference to a specific referent or semantic domain, and does not require presupposition for its interpretation, nor does the conjunction itself actually participate in the cohesive tie. For these reasons, and for the related one that '*áádóó* and *nt'ée'*' mark time-change shifts (and a time-change shift may mark the beginning of a new episode), the analysis of these two items will not examine them strictly as indicators of inter-sentence continuity, but rather focuses on their occurrence vis-à-vis episode boundaries.

Whereas '*áádóó*'s occurrences are all either episode-initial, or introducing the post-peak transition, *nt'ée'* also occurs episode-internally, as can be seen by examining the "Conjunctions" column of Figure 2. Given the difference in distribution, it should be the case that the reason '*áádóó*' consistently marks shifts in this discourse has to do with the way it relates the propositions that it introduces to the

foregoing discourse. That is, 'áádóó' should indicate a different kind of coherence than does *ńt'ée'*. On a very general level, a clear though noncategorical difference is immediately apparent: all four sentences introduced by 'áádóó' involve physical activity, using verbs such as 'run,' whereas only two of five sentences introduced by *ńt'ée'* involve physical activity, and the remaining three involve speech, rather than action.

Examination of the two other folk narratives revealed this to be a consistent difference in the use of these conjunctions. In the folk tale "The Giant and the Girl," and also in the longer (94 sentence) Coyote story "Coyote Makes Rain," 'áádóó' almost always introduces action. Tables 3, 4, and 5 display the data on the occurrence of 'áádóó' and *ńt'ée'* with propositions involving action, speech, and all other predications (generally states or conditions). Table 6 summarizes this pattern: in 85% of its occurrences, 'áádóó' introduces propositions involving action, whereas *ńt'ée'* shows no clear tendency to introduce one kind of predication over another.

The behavior of these conjunctions is in consonance with their literal meanings. *ńt'ée'* is morphologically an existential verb, literally 'it was,' and may occur clause-internally as a past time marker on verbs or nouns. The use of *ńt'ée'* as an indicator of temporal sequence follows from its general use as a past marker, treating the proposition that it introduces as an event, or set of events, which occurred at one time. Contrastingly, 'áádóó' is morphologically a postpositional phrase, literally 'from there.' In its use as a 'sequencer' in narratives, it may retain its literal sense as a spatial conjunction, or may shift in meaning to 'from that event.' In either interpretation, the sense of movement expressed by the postposition -*dóó* 'from' would be more compatible with the sequencing of actions, as opposed to speech or states. Since 'áádóó's literal meaning leads to its use as an introducer of actions, both the sequencing aspect and the action-introducing

aspect of its meaning can be used to indicate a new time **and** a new action in the narrative, a coherence shift of greater magnitude than that which can be signalled by *ńí'ée'*.

The analysis of temporal conjunctions, putatively cohesive items, is thus elucidated by examining their use with respect to discourse structure, even though only one of the two temporal conjunctions examined, *'áádóó*, showed consistent coordination with discourse structure. It should also be noted that since not all episodes are based on time-action shifts, and not all time-action shifts must be marked by *'áádóó*, narrative structure and *'áádóó* should not be expected to correlate in all cases.

The specific types of episode-change markers in discourse follow from the kinds of coherence shifts involved. In "Horned Toad and His Corn Patch," the time sequence and new actions are the basic coherence shifts defining new episodes and larger discourse units, so temporal conjunctions tend to mark these boundaries, and content shifts are reflected in the behavior of lexical cohesion.

3. Cohesion and Discourse Structure in Personal Narratives

We turn now to the relationship of cohesion to discourse structure in Navajo personal narratives. As was mentioned in the introductory section, no notion of the 'typical' Navajo personal narrative is available to guide the choice of one narrative as an illustrative example, so all four personal narratives will be given consideration here. Furthermore, the four personal narratives differ from one another (particularly in discourse structure/coherence) considerably more than do the three Coyote stories or three prayers examined, and in interesting ways. The organization of this section will be first, to describe the content and discourse structure of each of the four narratives; next, to comparatively summarize the salient facts about the patterns of cohesion in them; and finally, to

compare the relationship of cohesion to discourse structure in personal narratives with that found in Coyote stories.

3.1 Content and Discourse Structure of "The Story of a Woman Captured by the Utes." (Sapir & Hoijer 1942:334-336)

Orientation: (1) Long ago, when they were in pursuit, when I was herding (sheep),

Complication:

Episode 1 ('I was captured')

(1) the Utes came running up (a hill) on horses toward me. (2) And then one of them grabbed me. (3) They busied themselves with the killing of my sheep. (4) I, for my part, was just looking on. (5) Some of them were butchering and some of them were unsaddling the horses. (6) Then they roasted meat and prepared bread. (7) Then we ate. (8) When we had finished eating, they saddled the horses again. (9) Among what remained of my sheep, I again began to herd. (10) With me they were moving homeward.

Episode 2 ('They moved on with me.')

(11) From there (we went) to Red Rock Flat on Top, from there to Chinlee, to Canyon Inside, to Black Rock, to Flowing into the Rock, (and) to its summit. (12) From there (we went) over it, then across and toward the river. (13) There they took (the bits) with them. (14) When they had gotten across, at that place we ate. (15) When we had eaten, we separated. (16) One of them started off with me, I sitting (on the horse) behind him.

Episode 3 ('Killing my captor')

(17) In just that way (we went) on to the foot of Big Sheep Mountain. (18) There, at a place where just a little bit of water was flowing, we ate again. (19) He just making signs to me, I sat with him. (20) "How might I run away on horseback," I thought as I sat there. (21) And then there was a rock lying at that place. (22) "I'll pick it up," I thought as I sat down on it. (23) He, it seems, looked at me

(suspiciously) from time to time. (24) Then he picked up a stick that was there. (25) He began to busy himself, sharpening it to a point. (26) On one side he put it in, into his ear interior. (27) "Right then I shall rush toward him," I thought. (28) Then on my side (of him) he put (the stick) in again, he blinked his eyes.

Peak: (29) I struck him with my hand; that Ute fell over sideways. (30) Immediately I picked up that rock. (31) I sat down hard on him, I began to hammer on his skull. (32) Just as one tans leather, I hammered at him. (33) Soon I had killed him.

Resolution:

Episode 4 ('The Escape')

Episode 4a: (34) At once, I rushed over to the horses. (35) "Now indeed you are my horse!" I said to it. (36) I saddled him. (37) I grabbed up my belongings, I tied them up together. (38) Behind the horse's saddle, I tied (the bundle). (39) At once I jumped quickly onto the horse. (40) And then he rushed away with me, he started to run very hard with me.

Episode 4b: (41) At the place where the river flowed, right there I ate. (42) Just water and meat I ate. (43) From there (the horse) swam across (the river) with me. (44) I came up (the bank) on the other side. (45) From there, doing in just that way, the horse went on running with me, from the base of the mountain to its summit, on over it to the place we had come to before, (and) down to that canyon.

Episode 5 ('Safety')

(46) On the other side, at the place where (the Utes) had started off with me, someone was trotting along on a horse. (47) Then toward him the horse started to run with me.

Peak': (48) And it turned out to be my maternal uncle! (49) He was following my footprints! (50) Oh, how he wept as he embraced me!

Episode 6 ('Home and whole again')

(51) Then on to the hogan the horses trotted with us. (52) We came back to the hogan. (53) It happened that a ceremony had been made for (i.e. in order to get) me. (54)

And right then they did not sleep on me (i.e. they stayed up all night for a ceremony for me).

Closure: (55) At this point the story ends.

The personal narrative which comes the closest to approximating the ideal narrative structure is "The Story of a Woman Captured by the Utes," the narrative which is the least 'personal' of the four, since it recounts events in which the actual narrator did not participate.⁷ As this narrative opens, a (Navajo) woman is herding (= Orientation), when a group of Utes kidnaps her and kills some of her stock (= Episode 1 of the Complication). In Episode 2, the Utes move on with her and the remaining stock. In Episode 3, this continues, but one particular Ute is to travel with and guard the woman; the Peak comes as she takes advantage of the guard's inattention, and bludgeons him to death with a large rock. The Resolution is comprised of two episodes, the first of which has two subsections: Episode 4a tells how the woman galloped away on her horse, and Episode 4b details how she retraced her captors' steps. Episode 5 contains the Peak': as she wends her way back, whom should she meet but her maternal uncle, who had set out searching for her. The rest of this episode (and the Resolution section) tells of their return home, and of a ceremony held for the woman. The narrative closes with a formulaic *finis*.

3.2 Content and Discourse Structure of "The Raider."

"The Raider" (Sapir & Hoijer 1942:348-9) can generally be characterized as having a long, complex Orientation, and relatively short Complication and Resolution sections. Here is the text and discourse structure for this narrative.

Orientation:

(1) And then, in this direction, is this Red Water Canyon. (2) That (river) flows over yonder (to) the very big canyon. (3)

Down there some had moved in because of the enemy. (4) It was a Navajo, actually one who had become a raider. (5) He had gathered (a band of) perhaps three hundred of his comrades, possibly more, those who were poor in (property). (6) They got regularly to taking people's sheep from them; on account of them (the people) were in constant dread therefore.

Orientation₂:

(Restatement:) (7) And so, over yonder where the Red Water Canyon and the Ute's river flow together, down in the canyon they (i.e. the robbed people) were driven by fear on account of them (i.e. the robbers). (More background:) (8) There another (family of) people also moved down into the canyon following (the others). (9) They being two men related to each other by marriage,

Complication:

Episode 1 ('The raider's crime')

(9) their children alone went down into (the canyon). (10) While they were seeking deer at the canyon rim, their children alone went down in.

Peak: (11) There it seems (a robber) jerked the children one by one off the horse (they were riding). (12) He killed the horse.

Resolution:

Episode 2 ('The decision to kill, and its consequence')

(13) And so there they decided that he was to be killed, the one who had forced the children off the horse. (14) He Signals, he used to be called.

Peak': (15) But he was killed, the one whose children had been forced off the horse. (16) He it is, who was named Onion Cut Off, he it was who did the killing.

The lengthy (nine sentence, two section) Orientation is due to the fact that this narrative episode is somewhat off the topical progression in the larger narrative at this point; the narrative as a whole ("A Navajo's Historical Reminiscences," Sapir & Hoijer 1942:337-348) has been describing the troubles the Navajos had been having with outside groups,

which led to their forced relocation to Fort Sumner, whereas this episode/narrative deals with Navajo raiders preying on Navajos, perhaps to illustrate how desperate things had become. The (first) Orientation section begins with two sentences describing the geography, then in the next three sentences, the characters are introduced, and their motivations given. The second section of the Orientation begins with a one sentence restatement of the first section: 'And so, over yonder, where the Red Water Canyon and the Ute's River flow together, down in the canyon they (i.e. the robbed people) were driven by fear on account of them (i.e. the robbers).' This is followed by the 1-1/2 sentence introduction of another set of characters: another family, whose male head was related to the first by marriage, follows the first down into the canyon.

Next, the complicating action begins (with the main clause of sentence 9): the parents hunt deer at the canyon's rim, while the children ride into the canyon alone. This leads immediately to the Peak, sentences 11 and 12: 'There, it seems, (a robber) jerked the children one by one off the horse. He killed the horse.' There is no suspension of the action with an Evaluation section, or any other means, but the pre-Peak' part of the Resolution section is not itself particularly action packed; it relates the decision by the parents to kill the robber, and mentions his nickname. The Peak', then, comes as something of a surprise: 'But he was killed, the one whose children had been forced off the horse.' The story closes by giving the name of the killer.

3.3 Content and Discourse Structure of "My Father's Dying." (Sapir & Hoijer 1942:354-357)

Orientation: (1) And from there in this way they moved with us to Fort Sumner. (2) Here I do not remember well the number of days (it took). (3) At this Fort Sumner we arrived. (4) A tremendous number of Navajo having been brought there, they arrived with us.

Episode 1 ('My mother died')

(5) So (being), they having arrived there with us, my mother died. (6) My father, he alone took care of us, my brother and (me). (7) My father's sister, my paternal aunt, took care of us there (too). (8) At that place we wintered, at my father's hogan.

Episode 2 ('My father died')

(9) (After) maybe two years had passed, my father was dying. (10) Totally in vain, things were done on him, twice they danced the war dance for him in vain. (11) My father's death also took place.

Embedded Narrative:

Orientation: (12) My father, two nights before his death was to be, in the hogan I sat with him.

Episode A: (13) Then, he put his outstretched arm around my neck. (14) Just lying there, he shed tears for me. (15) "Dear one, my baby, much I have loved you. (16) It has come to be (that) I cannot see, yonder ridges I cannot see, it has come to be. (17) My end is nearing. [literally: 'toward me a mass/fog/cloud moves'] (18) Much I loved you, my baby, my dear one, my baby. (19) If you come to experience things beyond (this) danger, then take care of yourself. (20) The old men are asking (to be returned) to (our) old country. (21) If our old country should be given them, you should by some turn come onto it again. (22) Stand erect, take care of yourself. (23) My baby, so far (we have come); maybe in the meantime, the time being uncertain, for that purpose you should rest up." (24) Thus he spoke.

Episode B: (25) My paternal aunt, his sister, (from) out there she entered. (26) Right there, she embraced her brother. (27) "Why do you speak so, my brother?" (28) They wept for each other right there. (29) In the same way he had spoken to me, he spoke to his sister: (30) "Much I have loved (him). (31) Take care of him, my sister."

Coda: (32) Two nights later, his death took place.

The narrative structure of this second excerpt from "A Navajo's Historical Reminiscences" is rather different from

those of the personal narratives thus far considered. Here, the Orientation comprises only the first 4 of 32 sentences, but this excerpt deviates from the narrative norm more radically than any of the other personal narratives under consideration in one crucial respect. This episode/narrative is composed of two episodes, and it also has an embedded narrative, neither of which has a discernible Complication (with Peak) or Resolution (with Peak'). The "maximally reportable event" (Labov 1981:227-8) of this narrative is the narrator's father's death, but this event is not recounted in such a way as to make it either the Peak or the Peak'. The Orientation briefly describes the last part of the trek and the arrival at Fort Sumner: 'And from there in this way they moved with us to Fort Sumner. Here I do not remember well the number of days (it took).... they arrived with us.' Episode 1 relates the narrator's mother's death in a brief and unemotional way (sentence 5: 'So, after they had arrived there with us, my mother died.'), and describes its consequences: he and his brother were looked after by his father and his father's sister, and they wintered at their father's hogan. Episode 2 relates the father's death two years later, in somewhat more detail ('my father was dying... twice they danced the war dance for him in vain. My father's death also took place.'). This is followed by the embedded narrative, whose Orientation explicitly takes the listener/reader back before the father's death, while strongly implying that the embedded narrative will be about his death: (sentence 12) 'Two nights before my father's death was to be, I sat with him in the hogan.' The rest of the embedded narrative can be divided into two Episodes and a Coda, based on the coherence criterion. Episode A relates the father's heart-to-heart talk with his son, telling him of his love, and giving him advice. Episode B is comprised of an emotional conversation between the father and his sister, in which he again declares his love for his son, and asks her to take care of him. The last sentence of this embedded narrative (and of the larger excerpted narrative) functions as a sort of coda (in the sense of Labov & Waletzky 1967), in that it brings the listener/reader up to date, though not to the time of

not to the time of telling, but rather back to the point of the embedding. The Coda (sentence 32) is a near repetition of the first clause of the embedding's Orientation, which, in turn, links the embedding to the larger narrative: (sentence 32) 'Two nights later, his death took place.'

3.4 Content and Discourse Structure in "An Orphan's Story." (Reichard 1951:382-91)

Orientation:

Paragraph 1: (Theme) (1) When I was still small, my mother died, they say. **(Expansion:)** (2) I do not remember seeing her; I was probably only a baby when my mother died. (3) Only my father and my maternal grandmother were left. (4) I do not know how I managed to grow up after my mother died.

Paragraph 2: (Theme:) (5) From the time that I remember anything at all, I recall almost nothing except being absolutely pitiful. **(Expansion:)** (6) Things happened that were incredible. (7) As far back as I can remember I was pushed about in places as bad as ash-heaps. (8) From that time on, I was mistreated in every way that could possibly be imagined, and with any object that might possibly come to hand. (9) Just any old place, for example at the doorway, huddling face down, I used to spend the night. (10) No bedding was even provided for me.

Paragraph 3: (Theme:) (11) Even so, I nevertheless went herding. **(Expansion:)** (12) My deceased mother left some goats when she died. (13) I followed the survivors (goats) about. (14) Without shoes I herded the sheep. (15) Even my clothes were of flour sacks just as they happened to be, with these rags flapping about on me, I herded sheep. (16) My hair was filthy with burrs. (17) I was eaten [literally: 'killed'] with lice. (18) So it was that I spent my days suffering everything imaginable. (19) But even at that I had my stock.

Paragraph 4: Episode/Narrative:

Orientation: (20) Once when I had done something or other wrong,

Complication:

Episode 1: (20) my mother [grandmother] beat me and did not give me anything to eat for perhaps two days, maybe it was longer that I went herding the goats without food.

Episode 2: (21) One was a kid that I alone fed; this one always followed me about and at night lay cuddled in my arms. (22) That morning as I started outside with it to look for something with which to feed it,

Peak: (22) I fell right there with it in my arms. (23) I collapsed near the fireplace because of hunger.

Resolution:

Episode 3: (24) At that time, corn was the main staple. (25) So some thin gruel mixed with milk was made for me (and) after I had drunk this I was strong enough to go out and feed it.

This four paragraph narration also varies from the narrative norm, but in yet other ways. Seen from the viewpoint of narrative structure, "An Orphan's Story" is composed of three paragraphs of orientation, with the final paragraph recounting all of the actual events of the story. The overall content of this narrative indicates that the central purpose is not to recount personal events, but rather to describe the generally miserable conditions of the narrator's childhood. In the first three paragraphs, this theme is developed in a rhapsodic, rather than linear manner. For each of these paragraphs, the first sentence could be seen as its macroproposition, and the remaining sentences are non-narrative (Labov & Waletzky 1967), each restating or expanding that paragraph's theme in a slightly different way.

The final paragraph provides an exemplifying episode, which does itself have an abbreviated narrative structure, as indicated above. Having done something wrong (= Orientation), the narrator was punished not only with a beating, but was also denied food for a few days (=

Complication, up to the Peak). While starting outside to feed her favorite goat, she collapses from hunger (= Peak). She is fed some corn gruel, and thus revived, she goes out and feeds her goat (= Resolution).

3.5 Cohesion in Personal Narratives: Overview and Comparison with Coyote Stories

As we have noted, cohesion (in the sense used by Halliday & Hasan 1976) has to do with the ways and extent to which continuity of reference is expressed in a text. The topic(s) of the text, once established, can be developed in relatively explicit terms (as through the use of noun phrases or verb phrases which paraphrase or extend the original referent), or in relatively inexplicit terms (as through the use of pronouns and other pro-forms). The 'chains' of noun phrases, verb phrases, pronouns, and so forth, through which continuity of reference is expressed, make that text cohesive. Cohesion can be expected to vary from one part of a discourse to another; not all parts of a text are uniformly bound to one another, and topics may be developed and expressed in various ways. The four personal narratives whose varying discourse structures we examined above also have differing patterns of cohesion. Rather than presenting a graphic representation of their cohesive patterns (for which, see McCreedy 1983, Chapter 5), each text's cohesion will be discussed specifically in relation to that text's discourse structure.

In all four of the personal narratives shown, chains of cohesion tend to be located within one discourse section or another, but this coordination is neither as strongly apparent as in Coyote stories, nor does the main break in cohesion generally fall between the Complication and the Resolution. In "The Raider," cohesion breaks most noticeably at the boundary between the long Orientation and the action of the Episode. In "An Orphan's Story," paragraphs 1 and 4 (the introduction of the narrator as an orphan and the fainting episode) are the locus of some cohesive chains; others (such as

as the 'awful-misfortune' chain) persist throughout, or occur in most of two paragraphs (such as the 'sheep'-'goats'-'herding' chain(s) in paragraphs 3 and 4). "My Father's Dying" exhibits still other patterns of cohesion. In this case, since no Complication-Resolution division exists, cohesion cannot of course coordinate with such a boundary. The boundaries which are fairly strongly distinguished by content-cohesion shifts are the boundary between the Orientation and Episode 1, and that between Episode 2 and the embedded 'death scene' narrative. The Orientation is the locus of the cohesive chains 'moved'-'arrived', 'Fort Sumner,' 'they (i.e. the soldiers),' and 'us (i.e. the Navajos).' The embedded narrative contains many emotionally charged lexical items which participate in cohesive ties, and the items 'embrace,' 'shed tears' and 'much loved' in sentences 13, 14, and 15, respectively are linked with 'embrace,' 'weep,' and 'much loved' in sentences 26, 28, and 30, respectively, acting as a 'bracket' to help set off the content of the embedded narrative from that of the larger narrative excerpt within which it occurs.

Significantly, the personal narrative with the clearest narrative structure, "The Story of a Woman Captured by the Utes," also comes closest to having a cohesive break between the complication and the resolution, as is characteristic of the well-structured Coyote stories. Other than the chain of first person reference which persists throughout the narrative (a characteristic of the genre), the only cohesive link between the last episode of the Complication (Episode 3) and the first episode of the Resolution is the tie between 'rush' in sentences 28 and 35; two other ties, 'saddle' and 'horse,' link Episode 4 to earlier content.

Another point of similarity with the Coyote stories and of contrast with the other personal narratives is the choice of temporal conjunctions in "The Story of a Woman Captured by the Utes." Here, as in Coyote stories, coherence shifts are frequently marked by the temporal conjunctions *'áádóó* and *éni'ée'*,⁸ whereas longer, more lexically complex temporal conjunctions such as 'two nights before his death was to be'

are characteristic of the other personal narratives. In contrast with the Coyote stories, the other personal narratives examined do not tell of events following quickly upon events, and thus temporal conjunctions such as '(After) maybe two years passed' are more appropriate than 'and then'. The fact that 'and then' is the temporal conjunction used in "The Story of a Woman Captured by the Utes" stems from the fact that this narrative, like the Coyote stories examined, relates a series of active events.

In Coyote stories, the discourse structure is that of general narratives, with the stories' topical development (and thus, cohesive chains, and the use of temporal conjunctions) coordinating closely with the structuring into episodes, complication, resolution, and so forth. It is difficult to tell if the unity of text is due more to genre-specific structural conventions of narratives, or to the organization and expression of the specific content within those structural conventions. The general trend in the personal narratives studied is to take narrative structure as a much more flexible framework; more of a set of suggestions on functional organization than a rigid set of conventions. Since narrative structure is not as important in the building (and understanding) of a unified text, the textual unity in personal narratives must come in greater proportion from the specific organization and expression of content. That is, in personal narratives, cohesion plays a greater role in text unity than does discourse structure. The inversely varying relationship between discourse structure and cohesion and the approximate importance of each in the textual unity of the narratives examined is represented in Figure 7:

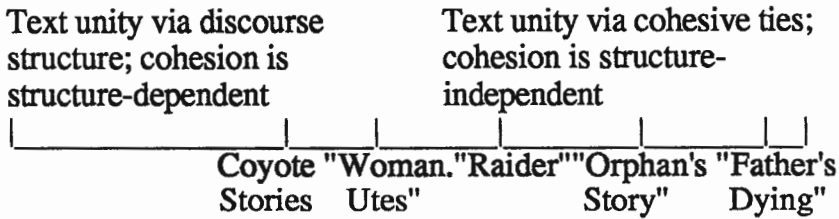


Figure 7: The Relationship between Cohesion and Discourse Structure in Narratives

4. Cohesion and Discourse Structure in Navajo Prayers

Cohesion is clearly less important than discourse structure in the creation of a unified text in the non-narrative genre of Navajo prayers. Their discourse structure is discernible in coherence patterns which relate to content and function; it is function, however, that is the most salient motivator of the structure of prayers. The exorcistic function of Navajo prayers in restoring a patient's physical, psychological, or social well-being results in a structure recognized by Reichard (1944) as comprising three major sections: the invocation, the petition, and the benediction. The invocation calls on the chosen deity by naming it and its dwelling place. The petition is the centrally performative section of the prayer. In litany fashion, the practitioner and patient recite lines asserting exactly what must come about for the patient to be healed, thereby actually bringing about the desired state of affairs. It is important to note that, although the practitioner is verbally healing the patient, the second person pronominal reference in the petitions of the "Prayer for the Doll" and "Prayer of the First Night Male Shooting Change Evil" does not refer to the patient, but to the deity, since healing can only occur through the controlling of the deity and its power. In the "Prayer for the Doll," this involves freeing the patient from harassment by a child-spirit, represented in the ceremony by a doll-like figurine. This is done by verbally restoring the doll to its

proper condition, then compelling it to leave the patient's home and return to the spirit realm. By the start of the benediction section, the transformation of the patient is complete. The benediction states that, and declares that the desired state of health, well-being, and harmony has been achieved.

4.1 Cohesion and Discourse Structure in "Prayer for the Doll."

Prayer for the Doll (Haile 1947)
(Excerpted; in English translation)

Invocation

- 1 Sun's child who stands upon a house shelf in the place called white house.

Petition

- 2 Properly I have restored your former condition.
- 3 Your feet I remade for you.
- 4 Your legs I remade for you.
- 5 Your body I remade for you.
- 6 Your mind I remade for you.
- 7 Your voice I remade for you.
- 8 Properly I have restored your former condition.
- 9 White bead to be your feet, I have made (you) again.
- 10 White bead to be your legs, I have made (you) again.
- 11 White bead to be your body, I have made (you) again.
- .
- .
- .
- 14 In a fine white bead I have dressed you again.
- 15 In a fine turquoise I have dressed you again.
- 16 In a fine abalone I have dressed you again.
- 17 In a fine jet I have dressed you again.
- 18 In variegated jewels I have dressed you again.

19 Into pollen, your feet I have remade.

.
.

.

35 By these means alive I have remade you.

36 By this means you have moved again.

37 By this means you took leave.

38 At my home's rear corner you took leave.

39 At my home's center you took leave.

40 At my home's fireside you took leave.

41 At my home's side corners you took leave.

42 At my home's entrance you took leave.

43 At my home's starting-away-trail you took leave.

44 At my home's leading-away-trails you took leave.

45 Along rainbow's trail, along pollen's trail you took leave.

46 Where your home first came into view you have arrived.

47 At your home's entrance you have returned.

.
.

.

75 They on their side, on earth whatever conditions there may
be,

76 Of this you were told.

77 Dark mists that form from time to time,

78 She-rains that form from time to time,

79 Of these you were told.

80 Tobacco that grows from time to time,

81 Its dew, its pollen that forms from time to time,

82 Of these you were told.

Benediction

83 In that event he shall recover.

84 What previously bothered him, right there it shall
disappear.

85 Right there it shall fade away.

86 Conditions are identical on both sides, that's clear.

87 Now in peace he shall continue to live.

88 Pleasant again it has come to be.

89 Pleasant again it has come to be.

90 Pleasant again it has come to be.

91 Pleasant again it has come to be.

Reichard, in describing prayers as "rhythmic prose" (Reichard 1944:37), referred to the repetition and near repetition of lines which is a predominant characteristic of the style of Navajo prayers. This serves several functions: first, it reinforces the compelling power of the prayer; next, it serves as a mnemonic device making the prayer easier to remember and repeat, which, in turn, serves to keep the prayer free from errors, and thus effective; lastly, it has an aesthetic value, as an expression of rhythmicity. Although the lines cannot be grouped entirely into stanzas, the prayers examined here do contain several groups of structurally parallel lines. Take, for example, lines 3 through 7 in the "Prayer for the Doll." Line 3, translated 'Your feet I remade for you,' acts as a sort of 'template' for lines 4 through 7, being repeated exactly, except for changes in direct object. The 'substitution items:' 'feet,' 'legs,' 'body,' 'mind' and 'voice' are clearly related in lexical content, and form a chain of lexical cohesion. The repetition of the verb form 'I remade for you' also constitutes a chain of cohesion, but one which is a secondary result of the rhythmic parallelism. Lexical cohesion is abundant in all three prayers, and is more strongly evidenced within groupings of structurally parallel lines, even if the cohesive effect of the lexical items used in the 'repetition frame' is downplayed or disregarded.

Not all lexical cohesion is tied to these sets of lines, however. For example, although the lexical item 'white bead' in line 14 of the "Prayer for the Doll" acts as an anchor of a collocational chain composed of references to other precious stones ('turquoise,' 'abalone,' 'jet,' and 'variegated jewels'), the occurrence of 'white bead' in line 14 is itself cohesively linked with the references to 'white bead' in the immediately preceding set of lines.

Cohesion in prayers is a general reflection not only of the groupings of syntactically parallel lines, but also of the larger

discourse units. By comparison with the cohesive chains occurring (particularly) within each prayer's petition, the ties linking the invocation to the petition and the petition to the benediction are sparse and weak.

4.2 Second Person Reference in Prayers

In the "Prayer for the Doll" and in the "Prayer of the First Night Male Shooting Chant Evil," there is one important cohesive tie linking the invocation and petition, which not only coordinates with discourse structure, but is actually dependent on it. Second person reference is a unifying chain in the petition sections of both prayers, and the 'anchor' for each of these chains (i.e. the antecedent of pronominal reference) is the naming of the deity in the invocation. Second person address in speech is usually interpretable by the speaker's orientation and gestures, whereas second person reference in text is interpretable by indications in the text, such as *he said (to her)* in "*You're late,*" *he said to her*, or in a pattern of alternating speech between two characters. As performed speech acts (within the speech event of the ceremonial), Navajo prayers have some aspects of the 'spoken address' situation, but since the exact wording of prayers is predetermined, they are performed texts, and second person reference in them should be interpretable by indications in the text. In the "Prayer for the Doll," the second person reference in 'Properly I have restored your former condition,' the first sentence of the petition, is understood as anaphoric to 'Sun's Child' in the invocation, because the participants and the audience know that the reference to 'Sun's Child' at the prayer's beginning constitutes an invocation. That is, a prerequisite to the cohesive tie between 'your' and 'Sun's Child' is knowing that the complex noun phrase which is the entirety of the first line (or first utterance) constitutes the invocation section of this prayer.

Similarly, second person reference in the second line of the petition section of the "Prayer of the First Night Male

Shooting Chant Evil" is understood as coreferential with 'Holy Man' in line 2 of the invocation precisely because it is understood to be an invocation.⁹ In both prayers, linguistic indication of the interpretation of second person reference presupposes a knowledge of the function and structure of prayers.

This contrasts with the situation in the Beautyway prayer (Wyman 1957), where cohesion between second person reference in the petition and its anchor in the invocation does not depend on a knowledge of discourse structure. The invocation includes second person reference in the clauses 'I have made you an offering, I have prepared you a smoke,' so second person reference in the first line of the petition ('This very day you shall remake my feet for me') is anaphoric to the earlier second person reference, and does not depend on discourse-structure knowledge for its cohesive force.

5. Conclusion

Cohesion, considered en toto, does not strictly mirror discourse structure. In the Coyote story "Horned Toad and his Corn Patch," chains of anaphoric reference for the two characters persist throughout the narrative, and the temporal conjunction *ńt'ée'* is not used only to mark structural shifts. However, because the topical organization of Coyote stories involves the relating of a series of events, certain aspects of cohesion do correlate with narrative discourse structure. New events in the narrative define new episodes, and the semantic grouping of lexical items into cohesive chains follows from this aspect of coherence. The understanding of the use of the temporal conjunction *'áádóó* was elucidated by considering that this putatively cohesive item might not function independently of discourse structure; an analysis which assumed *'áádóó* and *ńt'ée'* to be primarily cohesive could have concluded that the choice of one or the other was merely an unprincipled 'stylistic

option,' since they basically alternate, in the "Horned Toad" narrative.

Personal narratives are less planned than Coyote stories, and are not always told with the primary purpose of relating a series of events. Episodes can be composed entirely of non-narrative clauses (e.g. the first three paragraphs of "An Orphan's Story"), or a narrative may lack the Complication-Resolution division, and the semantic grouping of lexical items into cohesive chains reflects coherence which is not as clearly coordinated with discourse structure.

In Navajo prayers, the fact that lexical cohesion is secondary in linking groups of syntactically parallel lines, and the fact that the cohesive tie linking second person reference with its antecedent in some cases assumes knowledge of discourse structure, are further evidence that the interaction of cohesion with other text-unifying factors must be considered.

This examination of the interaction of discourse structure and cohesion has shown that different styles are characterized by different uses of text-unifying means.¹⁰ In Navajo prayers, though lexical cohesion is the predominant type of cohesion, it is secondary to structure in linking groups of syntactically parallel lines, and chains of lexical cohesion tend not to cross major discourse structural boundaries. In Coyote stories, discourse structure and cohesion are well coordinated. Chains of anaphoric reference referring to main characters provide overall cohesion, as do some lexical (/anaphoric) chains; the majority of these, however, are located within either the Complication or the Resolution. In the personal narratives examined, narrative structure is followed rather loosely; cohesion is more important to the unity of these texts, and does not merely follow from or consistently coordinate with discourse structure. Moreover, the more the structure of a personal narrative resembles the ideal narrative structure, the more its cohesive patterns will coordinate with that structure (as in "The Story of a Woman Captured by the Utes"). Figure 7 may be modified to express this relationship for all the texts which have been discussed:

Discourse structure is well defined, primary; cohesion is dependent, secondary			Discourse structure is not well defined, is secondary; cohesion is independent, primary		
Prayers	Coyote Stories	"Woman.. Utes"	"Raider"	"Orphan's Story"	"Father's Dying"

Figure 8: Cohesion and Discourse Structure in Navajo Prayers, Coyote Stories and Personal Narratives

More formal styles are thus more formal in a literal sense: they make greater use of the structural characteristics of that genre in the creation of a unified text, whereas less formal styles achieve text unity more by the expression of the intersentential continuity of content.

Halliday & Hasan (1976) may be justified in regarding cohesion as a theoretically distinct phenomenon, and more than just a manifestation of discourse structure, but the role of cohesion cannot be fully understood if it is analyzed in isolation from other text-unifying factors; the general interaction between structure, function, and content makes the analytical isolation of cohesion untenable.

Notes

1. The fact that this narrative was produced as a written text is not seen as a problem for two reasons. First, the narrator would have been raised in the same "oral tradition" as the other two narrators, and second, *Adahoni Hgii* was Navajo-edited, and any 'cleaning up' done by the author or editor would have been to Navajo standards, with essentially the same effect as that of the translation of the other two narratives by a Navajo (John Watchman).

2. Labov, as a 'prime mover' in sociolinguistics, has studied language in its social context at several analytical levels ranging from phonological to discourse structural and pragmatic. Labov (1966) exemplifies his approach, which emphasizes the patterned variability in language. Longacre is a proponent of tagmemics, as reflected by his emphasis on a hierarchical view of the organization of discourse (and language) structure, and also by his description of function-form relationships in terms of "slot" and "filler."
3. Van Dijk does discuss the marking of episode boundaries in the text, by time- and place-change markers, tense-aspect shifts, and other means. However, these markers do not define episode boundaries; his definition of episode is commendably noncircular, being rooted in propositional semantics and the coherence concept.
4. The other three types of (English) cohesion are: (a) *substitution*, in which nominal substitutes such as *the same* and *one(s)*, and the verbal pro-form *do so* accomplish cohesion by virtue of being coreferent with fuller NPs or VPs in prior text; (b) *ellipsis*, regarded as "substitution by zero" by Halliday & Hasan (1976:142), as in the reply to "Have you been swimming?" -- "Yes, I have." (c) *conjunction*, which has to do with the way sentences are linked to prior discourse, and includes adverbial expressions with a connective meaning (e.g. *in addition*, *as a result*) as well as the form class of conjunctions. Navajo does have conjunctive expressions, but these (and perhaps the English ones as well) function to indicate coherence, rather than cohesion; see section 2.2.
5. In addition to demonstrative and personal pronouns, Halliday & Hasan's category of reference also includes "demonstrative adverbs" such as *here*, *there*, and *then*, "comparative adverbs" such as *identically* or *differently*, and "comparative adjectives" such as *same*, *different*, and *better* (Halliday & Hasan 1976:37-39).

6. Navajo verbs have obligatory pronominal prefixes referring to the verb's argument(s); independent pronouns may also occur (for emphasis), but are rare. The chart below is of the pronominal prefix system:

NAVAJO PRONOMINAL PREFIXES			
Person	Singular	Duoplural	Plural
1	(sh) shi-	(iid) nihí-	danihí
2	ni-		
3		(Ø), bi-	dabi-
3'		yi-	dayi-
4		(ji), ha-, ho-	daha-/ho-

(Notes: subject/agent forms, where differing from object forms, are given in parentheses. 3', sometimes termed the "3rd on 3rd object," does not occur other than as an object. With few exceptions, a given pronominal category will be expressed in essentially the same form, whether occurring as an independent pronoun, verb prefix, postposition, or possessed noun. Morphophonemic variants and minor lexical variants have been omitted, as have the indefinite, reflexive, and reciprocal prefixes. Fourth person is generally used for higher status referents; 3' for non-salient referents, such as props or minor characters.)

7. Although told in the first person (possibly to avoid the need for such evidentials as *jini* 'it is said' or the dubitative *-shíí* 'probably, it seems'), the narrator is not the woman, but actually a man. For the present analysis, Sapir's designation of this as a "personal narrative," a category which otherwise includes the long autobiographical narrative "A Navajo's Historical Reminiscences" (from which "The Raider" and "My Father's Dying" have been excerpted), is accepted and taken to mean that the content, while not expressing the narrator's direct experience, is the recounting of an event chosen by the narrator as exciting or important, and is not fiction.
8. The main verbs in the sentences introduced by '*áádóó*' show the same generally high activity level as those in the Coyote stories: 'roast,' 'eat,' 'rush away,' 'come up (from swimming underwater),' and 'run.' Unlike in the Coyote stories, *ní'ée'* is not used as an introducer of quoted speech; there is very little quoted speech in this narrative. However, the group of main verbs in sentences introduced by *ní'ée'* encode less intense activity than those introduced by '*áádóó*', overall: 'a round solid object lies,' 'pick up a long slender object,' 'poke at something with a long pointed object,' 'do so,' and 'a ceremony was made.'
9. It might be argued that in the case of the "Prayer for the Doll," the petitioner orients toward the doll, and the petition's second person reference is fully interpretable through the speech situation. But in many other prayers, including the "Prayer of the First Night Male Shooting Chant Evil" (Reichard 1944), no physical icon is used.
10. Halliday & Hasan (1976:324-7) recognize three text-unifying systems in all: cohesion, discourse structure, and the distribution of old and new information within the clause. The Navajo clause does not follow the new-before-old principle of information ordering: the order of

prefixes and the stem is fixed, and when two or more full NPs occur, their ordering is governed by principles of noun-ranking (Hale 1976, Creamer 1974) and/or topicality (Saville-Troike & McCreedy 1979). However, Navajo may have a clause level phenomenon with a discourse unifying function: the classifier prefix in the verb. This morpheme indicates which verbal argument is most important to the action (or state, or process) of each verb, marking the focus of that clause. The classifier-marked focus in the successive clauses of a discourse is, not surprisingly, generally consistent with the topical development of the ongoing discourse, and thus dovetails interestingly with both cohesion and discourse structure. Chapter 7 of McCreedy (1983) goes into this matter in detail.

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Labov's Model Longacre's Model Navajo Narratives

Orientation	Aperture	Orientation
	Stage	
Complication Episodes	Pre-peak Episodes	Complication: (Pre-Peak)
	Peak	Peak
Evaluation	-----	-----
Episodes Resolution	Peak'	Resolution: (Post-Peak)
	Post-Peak Episodes	Peak'
Coda	Closure	Closure
	Finis	

Figure 1: Three Models of Narrative Structure

Table 3: Types of Activity Introduced by 'Áádóó vs. Ñt'éeé' in "Horned Toad"

Sentence	Verb of Main Clause	Type of Activity		
		action	speech	other
'áádóó	2	run	x	
	6	run	x	
	9	run	x	
	13	touch	x	
ñt'éeé'	4	say		x
	8	swallow	x	
	10	speak		x
	12	say		x
	15	cut	x	

**Table 4: Types of Activity Introduced by 'Áádóó
vs. Ñt'éeé' in "The Giant and the Girl"**

Sentence	Verb of Main Clause	Type of Activity		
		action	speech	other
'áádóó	9	go	x	
	11	go	x	
	26	come to be		x
ñt'éeé'	6	whistle	x	
	10	whistle	x	
	13	say		x
	19	fear		x
	25	say	x	

**Table 5: Types of Activity Introduced by 'Áádóó
vs. Nt'ée' in "Coyote Makes Rain"**

Sentence	Verb of Main Clause	Type of Activity		
		action	speech	other
'Áádóó	21	fill	x	
	29	run	x	
	31	fun	x	
	33	run	x	
	36	(none)		x
	37	run	x	
	40	run	x	
	44	run	x	
	47	look upward		x
	48	urinate upward		x
	53	club	x	
	63	say		x
	76	take	x	
nt'ée'	25	say		x
	28	say		x
	30	run	x	
	32	run	x	
	41	say		x
	46	say		x
	60	say		x
	61	say		x
	65	crawl	x	
	68	run	x	
	74	poke out	x	
	81	run	x	
	88	poke out	x	
	90	be nothing more		x

**Table 6. Summary: Types of Activity Introduced
by 'Áádóó vs. Nt'ée'**

	Type of Activity		
	Action	Speech	Other
'áádóó			
"Horned Toad ..."	4/4	0/4	0/4
"Giant & the Girl"	2/3	0/3	1/3
"Coyote Makes Rain"	11/13	2/13	0/13
TOTAL	17/20 (85%)	2/20 (10%)	1/20 (5%)
nt'ée'			
"Horned Toad ..."	2/5	3/5	0/5
"Giant & the Girl"	2/5	2/5	1/5
"Coyote Makes Rain"	7/14	6/14	1/14
TOTAL	11/24 (46%)	11/24 (46%)	2/24 (8%)

**Figure 2: Horned Toad and His Corn Patch:
Content, Discourse Structure, Cohesion**

Discourse Structure	Sentence	Conj.	Chains of Cohesion
Orientation	1 Long ago, Horned Toad planted, they say (<i>'ałk'idā ā na'ashó'iidich'ízhii k'i'dífláá, jíní.</i>)		'plant' 'Horned Toad'
	2 Then it seems, when (things) had ripened, (<i>'áádóóshíí', ná'neest'ā āgo</i>)		'ripen'
Complication Episode 1	(2) Coyote came running to him, they say (<i>ma'ii baayíłghod, jíní</i>)	'áádóó	'run' 'Coyote' 3
	3 (Horned Toad) roasted corn for him, they say. (<i>naadā ā bádzist'é, jíní.</i>)		'corn' 'roast' 3 4
	4 And, "It is indeed sweet," (Coy.) said, they say (<i>ńt'ée', "łikanlá, néi, jíní.</i>)	ńt'ée'	Ø 'sweet' 3
	5 He ran off back (to his house), they say. (<i>'anaalghod, jíní</i>)		'run' 3
	6 Later, (Coy.) came running again, they say (<i>'áádóó, náánálghod, jíní.</i>)	'áádóó	'run' 3
Episode 2			

	7	(H.T.) again roasted (corn) for him, (bánaádzíst'é, jíní.)	Ø 'roast'		3	4
Peak:	8	Then, unexpectedly, (Coy.) swallowed (H.T.), they say. (ńt'ée', jóhódah, 'ahoołna', jíní)	ńt'ée'	'swallow'	3	3indef.
Transition	9	Then, it seems, (Coy.) began to run. ('áádóóshíí, dahdiilghod.)	'áádóó	'run'	3	
Resolution						
Episode 3	10	Then, from inside (Coy.), (H.T.) spoke. (ńt'ée', bighi'déé' hadzoodzíf.)	ńt'ée'	'inside'	3	4
	11	"This? What is it?" he said as he touched (Coyote's) heart. ("díísh? ha'át'íí 'át'é?" jínífigo bijéi bízhdílnih.)	'touch'	'heart'	3	4
	12	And then, "Keep away! Do not meddle with it," (Coy.) said to him, they say. (ńt'ée', "nóghwe! doobaańjít'íída, bijíní, jíní.)	ńt'ée'	'meddle'	3	4 3

Episode 4

[illegible]

The Athapaskan First Duoplural Subject Prefix

Gillian Story

Cook (1971.166) in speaking of the Sarcee first (duo)plural subject prefix recalls Sapir's remark that:

The only certain example of an inflected tone in Sarcee that I know of which cannot be analyzed into two simple tones is the low falling tone, \hat{a} ·-, of the first person plural subjective, e.g. *gimicâ·t'ò·j* "we suckle them", *násâ·zo:* "we get moist". Full historical knowledge would probably indicate that this element is contracted from two simpler elements of middle tone and low tone respectively.' (Sapir 1925a.195).

The first part of this paper¹ will suggest the historical shape of the first duoplural subject prefix. Cook (1974.107) gives *(s)aad* as the basic shape of this prefix in Sarcee; the second part of the present paper will discuss the source of *s* (and its cognates in other Canadian Athapaskan languages) in this prefix. In the third section the meaning of the prefix will be considered. (In this paper, all cognates of the prefix will be called the 'first duoplural (subject prefix)' unless the context requires the use of a different meaning in discussion of a particular Athapaskan language.)

1. Reconstruction of the first duoplural subject prefix

We will take for our starting point the form of the first duoplural in the Apachean languages and in Sarcee.

1.1 The first duoplural in the Apachean languages and in Sarcee

Data is available for seven Apachean languages (Hoijer 1938, 1945, 1946). The basic form of the first duoplural is $\dot{l}:D$ in Navajo and Chiricahua, and $\dot{l}D$ in Mescalero, Lipan, Jicarilla, San Carlos, and Kiowa Apache. In these forms, D represents the well-known Athapaskan D-effect in the first duoplural with the zero-classifier. In the first duoplural with the \dot{t} -classifier, $D + \dot{t} > l$ in Navajo and San Carlos Apache (the process is a universal one in Athapaskan; see, for example, Golla 1971.74). (In Chiricahua, Mescalero, Lipan, Jicarilla, and Kiowa Apache the reflex of the $*l$ -classifier is \dot{t} , not l , so that in those languages D has no effect on the \dot{t} -classifier.)

Hoijer reconstructs Proto-Apachean $*iid$ for the first duoplural subject prefix (1969.158). However, this reconstruction ignores the nasalization which occurs in five out of the seven languages under consideration. The nasalization in the first duoplural occurs in just those languages in which the reflex of Proto-Athapaskan (PA) $*\eta\theta$ contributes a component of nasalization in prefix strings. The PA prefixes having the form $*\eta\theta$ are the perfective marker and the second singular subject prefix (Krauss & Leer 1981; see Cook 1981 concerning $*\eta$). Nasalized reflexes occur in the deictic persons² of zero-classifier γ -perfectives, for example, and in conjunct second person singulars of nonperfectives; the table exemplifies the prefix strings (CV in the table represents a conjunct prefix).

Table

	first dpl	third sg perfective	second sg nonperfective
Navajo	ì:D	yí·	CṼ
Chiricahua	ì:D	hó·	CṼ
Mescalero	ì:D	hó·	CỸ
Lipan	ì:D	hó·	CỸ
Jicarilla	ì:D	hí·	CỸ
San Carlos	ì:D	hí·	CỸ·
Kiowa Apache	ì:D	γí·	CỸ·

This correlation suggests a possible reconstruction, containing **ŋə*, of the Proto-Apachean first duoplural prefix. Apachean languages are low-marked (Krauss 1978) and *Cì:* is the reflex of **Ci?* (where ? denotes constriction of the vowel). However, *Cì:* may also be the reflex of **CəCə*; for example, in Navajo, *t'i:s* 'cottonwood' (PA **t'əγəs*), *t'i:š* 'snake' (PA **t'əγəšw*) (the San Carlos (Western) Apache forms of these nouns are the same, see Perry 1972). In the synchronic morphophonemics also, *CəCə* (that is, *CiCi*) may reduce to *Cì:*; for example, *nàyì:tni:h* 'he is trading it' (*yì:* < *yi* + *hi*), *ʔàdì:lyé* 'he is killing himself' (*dì:* < *di* + *sì*). At this point, then, the posited Proto-Apachean reconstruction of the first duoplural is **əŋəD* (with no initial consonant), with reflexes *ì:D* in Navajo and Chiricahua and *ĩ:D* in the other five Apachean languages, the nasalization in the prefix deriving from **ŋə* in these five languages just as it does in the perfective and second singular forms.³

However, since there is neutralization in the reflexes of nonconstricted and constricted reduced vowels in Navajo, *i:* may be the reflex of **ə(?)Cə(?)* in which one or both of the vowels may be constricted. Whether either of the vowels is constricted may be settled by consideration of the Sarcee form of the prefix, in which, as we have seen, the vowels of the prefix carry a mid and a low tone (*ā̃* in Sapir's notation). Sarcee has three tones, high, mid, and low. Like the Apachean languages, it is a low-marked language and the reflexes of constricted vowels carry low tone. It is suggested by Leer (Krauss 1978.35) that vowels carrying mid tone are the reflexes of nonconstricted reduced vowels; vowels carrying high tone are the reflexes of nonconstricted full vowels. Therefore, since the first duoplural prefix in Sarcee carries mid-low tones, the second vowel of the prefix should be the reflex of a constricted vowel. The Proto-Apachean-Sarcee reconstruction is therefore **əŋəʔD*.

1.2 The first duoplural in the Pacific Coast Athapaskan languages

In the Pacific Coast Athapaskan (PCA) languages, the *d*-classifier is generally overt, syllabic or syllable-final, *d* in the Oregonian group and *də* in the Californian. There is therefore generally no D-effect on the stem initials (though in Tututni *Dy > dž*). Examples from Tututni (Oregon) illustrating the overt *d* of the classifier are *nətesdbəd* 'it started to boil', *nədbəd* 'it boils' (Golla 1976a). Examples from Mattole (California) with overt *di* of the classifier are *sisdiya:n* 'I became old', *ʔindiya:x* 'you become old', *diʔišdiya:x* 'I shall be old' (Li 1930).

In the three Oregonian languages, Tututni (Golla 1976a), Chasta Costa (Sapir 1914), and Galice (Hoijer 1966), the form of the first duoplural is *id* with the zero-classifier, *iD*

with the t -classifier where $Dt > l$, and i with the d - and l -classifiers. First duoplural examples in Tututni are *niddas* (zero-classifier) 'we are heavy', *natš'ildeh* 'we wash (something)' (t -classifier), and in Galice are *sidiŋ* (zero-classifier) 'we are lying down', *dilbad* (t -classifier) 'we boil it'. Generalizing then, the form of the first duoplural in Oregonian Athapaskan is $i(d)$ where d is realized by d with the zero-classifier and by a 'D-effect' operating on the t -classifier (in which $dt > l$).

The forms of the first duoplural in the three Californian languages, Hupa (Golla 1971, nd.), Mattole (Li 1930), and Kato (Goddard 1912) with the zero- and l -classifiers are di , di , and $də$ respectively and with the t -classifier they are diD , diD , and $dəD$ respectively, where $Dt > l$. (The form with the d -classifier is left out of account for the moment.) Examples from Hupa are *sidiŋ:ts'* (zero-classifier) 'we are lying down', *niɬiŋsaŋ* (t -classifier) 'we see you', *ʔidiɬiŋ* (l -classifier) 'we are happy'. Examples from Mattole are *ginidiye:x* (zero-classifier) 'we talk', *na:diɬiɬilga:l* (either t - or l -classifier) 'we'll stay here'. Generalizing from these forms (which do not, as yet, include d -classifier forms), the form of the first duoplural in Californian Athapaskan is $də(D)$ where D is realized by a 'D-effect' operating on the t -classifier.

Krauss considers that $də$ in the t - and l -classifier forms of the first duoplural in the Californian languages is analogical (1969.65). In this connection, consider the Mattole examples below, analysed by columns into adverbial/modal, first duoplural, classifier, and stem:

ʔi	di	#	d-aŋ	'we eat'
ʔiyi	:di	#	d-aŋʔ	'we have eaten'
dže	:di	l	ge:	'we kill them all'
ʔididiyi	di	#	ʔiy	'we will run'
ʔide:s	di	#	ʔiy	'we have run'
de:s	idi	[di]	dže:ɣ	'we have floated off'
gina:s	di	#	ʔay	'we have turned around'
na:diye:s	di	l	ga:ʔl	'we have been staying here'
ʔis	di	l	di:ʔn	'we growl(ed) at each other'

Note the apparent stem-initial *d* in the first two forms. The first person singular of the imperfective paradigm of the same verb is ʔiʂaŋ 'I eat'; the stem is historically vowel-initial (Krauss & Leer 1981) and the classifier is zero. Therefore *d* in the first duoplural forms of the verb must be assigned to the first duoplural prefix rather than to the stem, corresponding to *D* occurring with the *ʔ*-classifier. (The third and last examples are *ʔ*-classifier forms in which *Dʔ* has become *l*.) If this assignment is correct, then in the first duoplural forms of the verb 'eat' an archaic form *dəD* of the prefix with the zero-classifier occurs and the element *də* occurring with the *ʔ*- and *l*-classifiers is not analogical; rather, *də* occurring in the archaic form of the prefix with a zero-classifier corresponds to *də* occurring with *ʔ*- and *l*-classifiers. (Stem-initial *d* is not manifested in a corresponding form in Hupa, *kʔʷɪdɪyaŋ* 'we eat', Golla 1971.71.)

Next, note the vowel length immediately preceding the first duoplural element *di* in the second and third examples. The *ɣ*-perfective and the progressive prefix, contained in the second and fourth examples respectively, both have the shape

ɣi, so that the vowel length in the second and third is unexplained unless it can be assigned to the first duoplural prefix. Compare the third example with *dʒitge*: 'you kill them all' from the same paradigm. We will return to this point after discussing the first duoplural with the *d*-classifier.

Discussion of the first duoplural forms with the *d*-classifier in the Californian Athapaskan languages was left over in earlier paragraphs. In Hupa, the allomorph of the first duoplural occurring with the *d*-classifier is *y*; the sequence *Cɫ-y* becomes *Ce(:)* (Golla 1971:71). Hupa examples of the first duoplural with the *d*-classifier are *se:diya:n* 'we are old', *tne:diɫɫɪn* 'we might go off' (the latter is a potential form and therefore occurs with the *d*-classifier; similarly, *tnohdiɫɫɪn* 'you dpl might go off').

The descriptions of Mattole and Kato do not mention a corresponding allomorph in these languages. By implication, the forms of the first duoplural prefix occurring with the *d*-classifier are *di* and *də* in Mattole and Kato respectively, or, including the *d*-classifier in the string, *di-di* and *də-d*. In Hupa, it appears that the corresponding sequence *dɫ-dɫ* is not permitted to occur but is replaced by *y-dɫ*, or that *dɫ* in the first duoplural deletes immediately before the homophonous *d*-classifier. In Mattole, the only example that Li gives of a first duoplural form with the *d*-classifier is *de:sididže:ɣ* 'we have floated off' (included in the Mattole examples above), an *s*-perfective form. The expected form, if *di* is the form of the first duoplural with the *d*-classifier, would have been *de:sididže:ɣ*. Comparison with the other *s*-perfective forms given above suggests that a rule in which *d* --> Ø (that is, in which *sdi* --> *si*) is not well-motivated and the alternative to such a rule seems to be to posit, very tentatively, a correspondence between *i*, the allomorph of the first duoplural in this form, and the vowel length in the second and third examples tabulated above, and also deletion of *di* in the

first duoplural immediately before the homophonous *d*-classifier as in Hupa. The first duoplural prefix may have up to three components, all three occurring in the Mattole form *ʔiʔi:didanʔ* 'we have eaten'.

In the light of this discussion of PCA, the suggested Proto-PCA reconstruction of the first duoplural prefix is **idəD* or **ydəD*. Golla (1971:74), without discussing it, suggests that the first duoplural subject prefix (assumed to be **i-də*), and the reflexive prefix **də* have origins in an impersonal subject prefix **də* (see section 3.3). The PCA languages are not tonal and provide no evidence for the presence or absence of **ʔ* in the reconstruction.

1.3 The first duoplural in other Athapaskan languages

Other Athapaskan languages in which the cognate prefix contains an element *də* preceding *D* (where *D* represents D-effect with the zero-classifier and a 'D-effect' with the *ɬ*-classifier in which *Dɬ > l*) are Babine and some dialects at least of Carrier. In some dialects of Kutchin, *də* occurs in the first duoplural with zero-classifier verbs but does not co-occur within the prefix with *D* or with the *d*-classifier.

In Babine and Carrier the cognate subject prefix is the first dual, *dəD* in Babine, *iD* in Upper or Central Carrier, and *idəD* in Lower Carrier (for the Lower Carrier form, see Story 1984:4). However, recent fieldwork in Central Carrier by E.V. Pike has established that Central Carrier has a tonal system (Pike 1986) and that it is a high-marked language. Subsequent study of the verb prefix tonomechanics shows that the underlying form of the first dual prefix is *idəD* (Story this volume b). Therefore the reconstruction of the Proto-Babine-Carrier form of the first dual prefix is **iʔdəD*.

In Fort Yukon Kutchin, the first duoplural prefix is $\dot{\iota}:(D)$, manifested by $\dot{\iota}:$ with the zero- and d -classifiers and by $\dot{\alpha}:$ with the t - and l -classifiers. The prefix $\dot{\iota}:(D)$ is archaic and the modern first duoplural prefix is $tr'\theta$, the reflex of $*t\dot{s}w'\theta$.

For Canadian Kutchin we may deduce from McDonald's (1911) forms that the first duoplural prefix is $\dot{\iota}:(d\theta) \sim \dot{\iota}:D$, substantiated by the Porcupine River form from Sapir's fieldnotes $n\dot{\iota}:dah\dot{\alpha}$ 'we stop overnight' ($n\dot{\iota}:h\dot{\alpha}$ in Fort Yukon Kutchin). $\dot{\iota}:$ occurs with the d - and l -classifiers, $\dot{\iota}:d\theta$ with the zero-classifier, and $\dot{\iota}:D$ with the t -classifier ($\dot{\iota}:D-t > \dot{\iota}:l$, by the general Athapaskan process, and $\dot{\iota}:l$ (from $\dot{\iota}:D-t$ or $\dot{\iota}:l$) $> \dot{\alpha}:$ in which the vowel a derives from the l -classifier. Note that $d\theta$ of the first duoplural prefix does not co-occur with $d\theta$ of the d -classifier.

An examination of McDonald's paradigms (1911.16-74) discloses one interesting irregularity. In comparing second singular forms with first duoplural, the prefix strings of the pairs of forms are related as follows: (1) when a conjunct prefix (derivational or modal) is present, the stem is immediately preceded by CVn/CY in the second singular and $CV(d\theta)$ in the first duoplural (V in the two forms is the same), $d\theta$ occurring with the zero-classifier; (2) in the absence of a conjunct prefix (that is, in the disjunct zero-imperfective), the classifier + stem in the second singular is immediately preceded by nyi (without nasalization in the vowel) when the classifier is zero or $d\theta$, and by $nyan/ny\dot{\alpha}$ when the classifier is t or l , and the stem (without the classifier) in the first duoplural is immediately preceded by $id\theta$ when the classifier is zero or $d\theta$, and by al when the classifier is t or l . Note the occurrence of ny in the second singular forms; second singular nyi is the reflex of PA $*\eta\theta$. There are two cases of a disjunct pattern occurring in the

second singular when a conjunct pattern would be expected; this irregularity does not concern us here. However, in two other cases, both with zero-classifier, and both disjunct zero-imperfective, *nyidə* occurs in the first dual in one case and the first plural in the other (p.30, 28), and not *idə* as expected.

This irregularity lends support to a pre-Kutchin $*(ə)ŋəʔdə$ first duoplural prefix in zero-classifier forms and by extension to $*(ə)ŋəʔD$ in *t*-classifier forms, and $*(ə)ŋəʔ$ in *d*- and *l*-classifier forms, or, conflating these reconstructions, to $*(ə)ŋəʔ(də)$ in which *də* with the *t*-classifier is equivalent to *D*. McDonald's transcriptions do not supply tone (or length) but Kutchin, like the Apachean languages and Sarcee, is low-marked.

The reconstructions for the first duoplural prefix therefore compare as follows:

Proto-Apachean	$*ə(?)ŋə(?)$ -	-	<i>D</i>
Proto-Apachean-Sarcee	$*əŋəʔ$ -	-	<i>D</i>
Proto-PCA	$*i$ -	<i>də</i>	- <i>D</i>
Proto-Babine-Carrier	$*iʔ$ -	<i>də</i>	- <i>D</i>
Pre-Kutchin	$*(ə)ŋəʔ$ -	(<i>də</i>)/	(<i>D</i>)

Combining these, we arrive at a reconstruction $*əŋəʔdəd$ for Proto-Athapaskan. Even though this reconstruction makes no allowance for dialectal variation in Proto-Athapaskan, note that reflexes of all three components of the reconstruction are clearly present in Carrier. (Concerning the component $*əŋəʔ/*iʔ$, note that the modern reflexes of $*ŋ$ are *y*, *n*, and *ŋ*, and an alternative reconstruction for $*ŋ$ is palatal $*n$, see Cook 1981; the difference between $*əŋə$ and $*i$ is essentially one of the presence or absence of nasalization.)

The cognate prefix could be expected to occur archaically in Han as in Kutchin (Krauss p.c.). In other Alaskan

languages, the cognate prefix is absent. These languages are Upper Tanana, Tanacross, Tanana, Upper Kuskokwim, Koyukon, Holikachuk, Ingalik, Tanaina (Kari 1975, Tenenbaum 1978), and Ahtna.

The cognate prefix is also absent in Kwalhioqua-Tlatskanai (the extinct Columbia River Athapaskan).

Of the languages so far considered, the Apachean languages, Sarcee, and Kutchin are tonal and all are low-marked; that is, low tone in these languages arises from a glottal stop in the syllable nucleus and/or from syllable-final glottalization in Pre-Proto-Athapaskan (Krauss 1978.11, Leer 1979.26, 34). In each, the first duoplural prefix is found to carry low tone (or a mid-low tone glide in Sarcee), a fact which clearly indicates the presence of *ʔ in the reconstruction of this prefix. In the languages which remain to be considered and for which data concerning the prefix is available, Southern Tutchone, Dogrib, and Sekani,⁴ are low-marked and in them the prefix carries low tone. Northern Tutchone, Chilcotin, Chipewyan, Slavey, Hare, Mountain, Bearlake, and Beaver are all high-marked and in them the prefix carries high tone.⁵

The cognate prefix occurs in Tagish, Tahltan, and Kaska; these are dialects of a single language (Krauss & Golla 1981). According to Krauss 1978 and Krauss & Golla 1981, Tagish and Tahltan are low-marked and Kaska is high-marked. Nater (1986) also finds some indication of marked low tone in Tahltan; however, Hardwick (1984) finds Tahltan to be nontonal.⁶

Leaving Tagish-Tahltan-Kaska aside, no exception has so far been found between the low-markedness of a language and the low tone carried by the prefix and the high-markedness of a language and the high tone carried by the prefix.

2. Reflexes of **s* and the first duoplural

We return to those Canadian Athapaskan languages for which the form of the first duoplural (first dual in Bearlake and Dogrib) has not yet been given. Chilcotin (Krauss 1975, Cook 1976) and Chipewyan (Li 1946) are high-marked languages and the form of the prefix in them is *i(D)*. In Sarcee and in the remaining Canadian languages for which information is available, a consonant occurs initial to the prefix in some paradigms besides those paradigms which are reflexes of **s*-perfectives (and **s*-imperfectives) and the consonant is in each case the reflex of **s* in the language (or in Dogrib is its voiced counterpart).

For convenience, in following paragraphs these reflexes of **s*-perfectives will be referred to simply as '**s*-perfectives' (and similarly for '**s*-imperfectives').

In Slavey the prefix is $(\theta)iD$,⁷ in Hare $(w)iD$ (in Hare **s* > *w*), Mountain $(f)iD$, Bearlake $(hw)iD$, and Dogrib $(w)iD$, in Sarcee $(s)\bar{a}aD$, in Doig Beaver $(\hat{s})iD$, in Sekani $(s)iD$, in Tahltan⁸ and Tagish $(s/\theta)iD$ (possibly with low tone in at least some dialects). It appears probable that the consonant is characteristic of the northwestern Canadian Athapaskan (NWCA) language complexes Slavey-Hare-Mountain-Bearlake-Dogrib (Howren 1970, 1971), Sarcee, Beaver-Sekani, and Tagish-Tahltan-Kaska (Golla 1976b). Howren (1968) derived Dogrib *w* in the prefix from underlying *m* but in comparative terms this derivation is untenable. (The term 'NWCA' is used without intending to imply that any language in the group is necessarily more closely related to another in the group than to an Athapaskan language outside the group.)

2.1 Source of reflex of **s* in the first duoplural

It seems reasonable to suppose that the consonant originates in the **s*-conjugalional prefix though why it should have

attached to the first duoplural subject prefix is certainly problematic.

However, consider the following. All the languages in question (except Sarcee), and Chipewyan, for which paradigmatic data is available, have conjunct **s*-perfectives (that is, **s*-perfectives of verb bases containing a conjunct prefix) in which the reflex of **s* is manifested in the first duoplural only (voiced in Dogrib, in the first dual, see Ackroyd 1982); for example, in Slavey (in which **s* > θ) 1sg *'de-*, 2sg *'dɛ-*, 3sg *dé-*, 1dpl *déθlD-*, 2dpl *'da-*, 3dpl *gedé-*, unspec *ts'edé-* for a zero-classifier verb; 1sg *'deh-*, 2sg *'dɛ-*, 3sg *déh-*, 1dpl *déθl-*, 2dpl *'dah-*, 3dpl *gedéh-*, unspec *ts'edéh-* for a *d*-classifier verb (unspec = 'unspecified', see section 3.1). In Sarcee, it appears that the conjugational prefix is retained in all persons of the conjunct **s*-perfective and not in the first duoplural only.

Conjunct **s*-imperfectives can be expected to parallel conjunct **s*-perfectives. This is borne out by available data in Slavey, Hare, Mountain, and Bearlake (Rice 1983).

In NWCA generally, in other conjunct paradigms containing a conjugational or modal prefix, excepting optatives (that is, in *n*-imperfectives, *n*-perfectives, *y*-perfectives, progressives, and futures or 'inceptive-progressives'), the consonant of the conjugational or modal prefix is often overt in all persons of the paradigm and not only in the first duoplural.

Therefore, if the conjugational consonant is retained throughout these other paradigms, there could be a tendency to interpret **s* in the first duoplural of the conjunct **s*-perfective as part of the first duoplural prefix and not as conjugational since it is absent in the other persons in the paradigm so that **s* became attached to the first duoplural subject prefix. It is only in Sarcee that this hypothesis is not viable since in Sarcee the **s*-conjugational prefix is overt in all persons of the conjunct **s*-perfective and not in the first duoplural only (as already noted). Sarcee apart, rather than

the process occurring in every language or language complex individually, the process could be a historical one in the parent languages of NWCA. However, Leer (p.c.) has suggested that, in this language area, the occurrence of **s* initial to the first duoplural subject prefixes may be due to diffusion and this type of linguistic borrowing could account for the attachment of **s* to the first duoplural subject prefix in Sarcee (in non-**s*-conjugational paradigms).

Assuming, then, that the consonant of the **s*-conjugational prefix became attached to the first duoplural subject prefix in the conjunct **s*-perfective and **s*-imperfective in NWCA, it is suggested that this attachment extended analogically in certain cases to non-**s*-conjugational paradigms so that in these paradigms also the **s*-conjugational consonant became attached to the first duoplural subject prefix. In which paradigms the analogical extension is found is discussed in the subsections of section 2.2.

Note that in Dogrib it is *w*, the voiced counterpart of the reflex of **s* in the first duoplural of the conjunct **s*-perfective, that is found in non-**s*-conjugational paradigms, word-initially in zero-imperfectives as well as medially.

In other types of **s*-perfectives and **s*-imperfectives (which effectively means in disjunct⁹ **s*-perfectives and **s*-imperfectives), **s* occurs in at least all the nondeictic persons of the paradigm (and not only in the first duoplural), so that these paradigms would not be expected to be the basis for analogical extension of **s* to the first duoplural subject prefix in non-**s*-conjugational paradigms.

Concerning why the reflex of **s* might be retained in the first duoplural of the conjunct **s*-perfective and not in the other persons of the paradigm, one suggestion is that historically the first duoplural prefix contains the element **də* (which has been posited in the reconstruction of the prefix) and that (**əŋəʔ-də-D* >) **iʔ-də-D* > **diʔ-D* (see section 2.2.2 for a similar metathesis in innovative Dogrib), followed by **(CV)-sə-diʔD* > **(CV)-s-diʔD* > **(CV)-siʔD* in the **s*-perfective.

The process suggested has synchronic parallels in Koyukon in which $l\acute{a}d\acute{a} > \acute{t}d\acute{a} > \acute{t}\acute{a}$ (*l*-perfective with classifier $d\acute{a}$; in Koyukon, $*z > l$), and $sd\acute{a} > s\acute{a}$ (first person singular with classifier $d\acute{a}$). Kutchin provides exactly parallel examples. In Chipewyan, the 'indefinite' subject prefix $ts'\epsilon$ coalesces with an immediately following conjunct derivational prefix, $ts'\epsilon-C\epsilon > z\epsilon$ if C is *d* or *n*, or $ts'\epsilon-C\epsilon > s\epsilon$ if C is *t* or *h*; for example, $h\epsilon-ts'\epsilon-n\epsilon-l-?á > h\epsilon z\epsilon l?á$ 'one has been mistaken about it', and $ts'\epsilon-h\acute{e}-\theta-d-del > s\acute{e}\theta del$ 'people have started' (Li 1946), probably by way of a process $(\epsilon)zC\epsilon > s\epsilon/z\epsilon$.

Therefore, the retention of the reflex of $*s$ in the first duoplural of the conjunct $*s$ -perfective in NWCA may offer some support for an element $*d\acute{a}$ in the reconstruction of the first duoplural prefix. The element $*d\acute{a}$ has no overt manifestation in the synchronic first duoplural prefix of these languages.

2.2 The reflex of $*s$ in the first duoplural of other paradigms

We have discussed the reflex of $*s$ in the $*s$ -conjugalional perfective and imperfective paradigms. We have suggested that the reflex of $*s$ in the first duoplural extended analogically from these paradigms to the first duoplural in other, non- $*s$ -conjugalional, paradigms. The domain of the extension varies in the different languages and dialects included in Slavey-Hare-Mountain-Bearlake-Dogrib, Sarcee, Beaver-Sekani, and Tagish-Tahltan-Kaska.

2.2.1 *The reflex of $*s$ in the first duoplural of zero-imperfectives and perfectives*

The domain of the extension most frequently includes the disjunct zero-imperfective and the imperfectives and perfectives of $*i?$ -verbs.

The term '**i?*-verbs' is used to refer to the synchronic class of verbs containing the reflex of the conjunct derivational prefix **i?* 'transitional'. In Kari's (1978) analysis, **i?* verbs are zero-conjugational; that is, the imperfectives and perfectives of these verbs are zero-imperfectives and zero-perfectives. The prefix **i?* is 'multifunctional'; that is, like many of the conjunct prefixes it has several senses but two conjunct prefixes of the same shape do not co-occur. From one of the senses in which this prefix is used, Kari chooses the term 'transitional' to denote the prefix. (Other senses include 'seriative', 'semelfactive', 'inchoative', 'perfective-negative', the prefix selecting differing features of inflection and derivation for each of its senses or functions.) In this paper, we follow Kari's analysis of **i?*-verbs and therefore depart from Rice's (1983) analysis of certain Slavey-Hare-Mountain-Bearlake paradigms.

In each of Slavey, Hare, Mountain, and Bearlake, the reflex of **s* has extended to the first duoplural (that is, the first dual in Bearlake) in the (zero-)perfectives of **i?*-verbs. In Hare and Bearlake, the reflex of **s* in the first duoplural is not reported in any other paradigm that is not **s*-conjugational.

In Mountain, it appears that *f*, the reflex of **s* in this dialect, has extended to the first duoplural in the regular disjunct zero-imperfective (that is, in disjunct zero-imperfectives of verbs which are not **i?*-verbs) (Rice p.c.) (and always occurs in these paradigms?). However, this feature of the first duoplural in disjunct zero-imperfectives is not reported in Rice 1983.

In Slavey, *θ*, the reflex of **s* in this dialect, has extended to the first duoplural (for meaning, see section 3.1) of the regular disjunct zero-imperfective and also to the first duoplural of the conjunct and disjunct zero-imperfective of **i?*-verbs, occurring optionally in these paradigms. (Rather than treat the reflex of **s* in these latter paradigms as an optional feature, Rice considers the paradigms to be **s*-

conjugational or zero-conjugational depending on whether the reflex of **s* is present in the first duoplural or not; that is, as **s*-imperfectives or zero-imperfectives respectively, the paradigm types differing in only the first duoplural.) There are other innovations concerning the reflex of **s* in the first duoplural of other paradigms in Slavey which will be discussed in section 2.2.2.

In Dogrib, the reflex of **s* (voiced, as noted, in the first duoplural) has extended to the first dual of the regular disjunct zero-imperfective and always occurs in these forms, and is also recorded in the disjunct zero-imperfective of **i?*-verbs (Ackroyd 1982).

Also, the reflex of **s* occurs in Dogrib in the first duoplural of the zero-imperfective and zero-perfective of the two related verbs *a#O-(i)-Ø-le*, *là* 'affect O' and *a#(i)-d-nde*, *jà* 'happen' (*i* is the Dogrib reflex of **i?*): *awide ha* 'it will happen so to us two', *awìdlà* 'we two affected it so'. The reflex of **s* is also reported in the Slavey cognate first duoplural forms, and probably characterizes the Sarcee cognate forms also since a cognate form *âàsâàdláh* 'we will make it' (imperfective) occurs (Cook 1984). Note that the reflex of **i?* occurs in the deictic persons of the perfective of these two irregular¹⁰ verbs (for example, Dogrib *ayìlà* 'he affected it', *agòjà* 'it, time or weather, happened'), so that again a verb containing **i?* (and no other conjunct derivational prefixes) is found to have the reflex of **s* in the first duoplural of its disjunct zero-imperfective and zero-perfective.

In Sarcee, the reflex of **s* has extended to the first duoplural of the disjunct zero-imperfective (with a peg element to be discussed in section 2.4) (Cook 1984).¹¹ **i?*-verbs are not documented for Sarcee.¹²

The distribution of the reflex of **s* in the first duoplural is probably quite parallel in Beaver and Sekani. In Sekani, the

reflex of **s* has extended to the first duoplural of conjunct zero-imperfectives (there are no disjunct examples available which are not those of **iʔ*-verbs), and the zero-imperfectives of **iʔ*-verbs, and also (as in Slavey-Hare-Mountain-Bearlake) of the zero-perfectives of **iʔ*-verbs (Hargus 1983, 1986). In the conjunct cases, the first duoplural prefix is optionally discontinuous. (In the conjunct **s*-perfective also, the first duoplural prefix is optionally discontinuous.) The discontinuity of the first duoplural prefix in Sekani is discussed in section 2.3, together with parallel features of the Beaver first duoplural.

In Hardwick's (1984) Tahltan data, the reflex of **s* has extended to the first duoplural forms of all recorded paradigms including the conjunct and disjunct zero-imperfective, and the zero-perfective of **iʔ*-verbs (there are no available examples of zero-imperfectives of **iʔ*-verbs). In earlier data recorded by Hale, the reflex of **s* has not extended to the first duoplural in every case, but is found in the first duoplurals of conjunct and disjunct zero-imperfectives, and Morice (1903:532) recorded the reflex of **s* in a conjunct and a disjunct zero-imperfective.

In each of the groups Slavey-Hare-Mountain-Bearlake-Dogrib, Sarcee, Beaver-Sekani, and Tagish-Tahltan-Kaska, there is data from at least one of the languages or dialects of the group evidencing the extension of the reflex of **s* to the first duoplural in the zero-imperfective (most often the disjunct only), and in the zero-perfectives of **iʔ*-verbs (frequently in the zero-imperfectives also) except in Sarcee for which there are no available examples of first duoplurals of **iʔ*-verbs. Data from Dogrib, Slavey, and Sarcee suggests that the extension of the reflex may also occur generally in these languages in the first duoplurals of the zero-imperfectives and zero-perfectives of the related verbs 'affect O' and 'happen'. Plainly, in the extension of the reflex of **s* in the first duoplural, the favoured domain of the extension

includes the zero-imperfective and zero-perfective, whether of an **i?*-verb or not, at least in the case of active verbs.

2.2.2 *The reflex of *s in the first duoplural of all remaining paradigms*

As regards other paradigms, the reflex of **s* has not been found in the first duoplurals of the six paradigm types *n*-imperfectives, *n*-perfectives, *y*-perfectives, progressives, futures (inceptive-progressives), or optatives except in a few cases to be enumerated.

In Hare, Mountain, Bearlake, Dogrib, and Sarcee, the reflex has not been found in any of these six paradigm types (Rice 1983, Ackroyd 1982, and Cook 1974, 1984).¹³ The Slavey dialect is innovative with respect to the extension to other paradigms of the reflex of **s* in the first duoplural.

In Sekani, the reflex of **s* can be found in the first duoplural of *n*-imperfectives, *n*-perfectives, *y*-perfectives, progressives, and futures, but not of optatives (Hargus 1983, 1985a, 1986). However the first duoplural prefix is always discontinuous in these five paradigm types, whereas in **s*-imperfectives and **s*-perfectives, and zero-imperfectives and zero-perfectives, the prefix is only optionally discontinuous. For details and examples, see section 2.3.

In Tahltan, in the data recorded by Hardwick, the reflex of **s* has extended to the first duoplural forms of all recorded paradigms as previously noted. There are no futures or optatives in the data. However, the weight of the evidence is that the reflex of **s* is always present in the first duoplural (except, perhaps, in optatives?). In Hale's data (recorded in 1965), in Morice's data from the turn of the century, and in Thorman's (1902) data, contemporaneous with Morice's, the reflex of **s* is not generally found in *y*-perfectives and progressives, rarely in futures, and never in optatives. The all-inclusive extension of the reflex of **s* in first duoplural forms in Tahltan seems to be a recent phenomenon.

Dogrib is interesting in that it has an innovative variant *dì* (without D-effect) of the first dual *wìD* (Ackroyd 1982); for

example, conservative *sɔnàwɪgwo*, innovative *sɔnàdiwo* 'we two play'. *ɪ* metathesizes with *D* (with deletion of *w*, the voiced reflex of **s*). This is similar to the suggested earlier metathesis in which **iʔ-də-D > *diʔ-D*. However, note that in the Dogrib case the metathesizing elements are reflexes of **iʔ* and **D*, not of **iʔ* and **də* as in the earlier case. In fact, if the hypothesis is correct concerning the earlier metathesis **iʔ-də-D > *diʔD*, followed by **(CV)-sə-diʔD > *(CV)-s-diʔD > *(CV)-siʔD* in the **s*-perfective (section 2.1) (and the reflex of **s* in the first duoplural extends analogically to other paradigms), then both metatheses have occurred in historical succession in innovative Dogrib.

2.3 The Beaver-Sekani first duoplural subject prefix

Reference has already been made to the potential discontinuity of the first duoplural prefix in Sekani. In Doig (western) Beaver also the prefix may be discontinuous, but in Vermilion and Dunvegan (eastern) Beaver, this discontinuity seems not to occur (although the reflex of **s* is found in zero-imperfectives and zero-perfectives as well as in **s*-perfectives) (Goddard 1917).

The Sekani first (inclusive) duoplural prefix is *sə-..-iD* and the Doig Beaver prefix (also inclusive) is *ʂΔ-...-ɪD*; the first components are the reflexes of **sə*, deriving analogically from the **s*-perfective prefix (section 2.1).

In both Sekani and Doig Beaver the component **sə* of the first duoplural prefix occurs in the same prefix position as the deictic subject prefixes (for Sekani, see Hargus 1985a). In Sekani and in Doig Beaver this position has moved rightwards and occurs between the conative prefix *u* and the inceptive and other prefixes of the shape *də*. The deictic subject prefixes, but not the first duoplural component **sə*,

may shift to the left of the conative prefix.¹⁴ In **s*-perfectives and **s*-imperfectives, only the first duoplural component **sə* occurs and not the conjugational prefix **sə*, a fact which is consonant with the derivation of the first duoplural component from the **s*-conjugational prefix; a Sekani example is *tse tʰəʔsədiyeh* 'we put rocks in a circle' (**s*-imperfective).

In Sekani (but not regularly in Doig Beaver) the **sə* component of the first duoplural prefix may shift to the right of a contiguous conjunct prefix (or prefixes if more than one is present) of the shape(s) *də*, *nə*, *zə* and **s* then occurs in immediate sequence with the **iʔD* component of the prefix. The shift is optional in zero-imperfectives and perfectives and in **s*-imperfectives and perfectives (as stated in section 2.2.1); for example:

Ø-impf	usənibe ~ unəsibe	'we pick berries'
Ø-pf	hʷəsənɪdʒən ~ hʷənəsɪdʒən	'we started to sing'
<i>*s</i> -pf	səziŋi ~ zəsɪŋi	'we killed it'

The shift does not occur in *n*-imperfectives, *n*-perfectives, *ɣ*-perfectives, progressives, or futures (section 2.2.2); for example:

<i>n</i> -impf	ts'esənizit	'we wake him up'
<i>n</i> -pf	tʃetʃusədənɪtʃa	'we ran into water'
<i>ɣ</i> -pf	səŋigə	'we killed them'
prog	dahyɪdleɪ	'we are floating'
prog	tʃetʃusədəŋɪtʃet	'we are running into water'

Probably the **sə* component does not typically occur in progressives or futures (inceptive-progressives) but is in the process of analogical extension to these paradigms.

In both Beaver and Sekani the component **sə* is not found in optative first duoplurals (section 2.2.2). Beaver examples are *wádžłné* 'we will sing', *ʔádΔwákúš* 'we will cough'. In Beaver, the contrast between *wv* and *wΔ* is neutralized (Story this volume), and *wΔ* (optative) + *łD* (first duoplural) > *wúD* > *wÁD*. Sekani examples are *γùtsəγ* 'we will cry', *zəwùγet* 'we will kill it'.

In Doig Beaver, the first duoplural prefix is little used except in the optative.

There is much innovation in Doig Beaver, and in the zero-imperfective and the *γ*-perfective, the *łD* component of the first duoplural may be dropped (probably in the *n*-imperfective and *n*-perfective also but there is little data available), so that the prefix comprises the component **sə* only (occurring in the deictic subject position). In the *γ*-perfective of zero- and *t*-classifier verbs, if the *łD* component has been dropped, **sə* occurs with the perfective marker **ŋə* and then the first (inclusive) duoplural prefix string parallels that of the deictic subject prefix strings; for example, *háwΔšΔγəkq̄* ~ *háwΔšəkq̄* 'we incl dug a hole', *háwΔts'Δγəkq̄* ~ *háwΔts'əkq̄* 'we excl dug a hole', *ušΔdəkét* 'we incl asked for it', *uts'Δdəkét* 'we excl asked for it', instead of *háwΔšΔγłkq̄* 'we incl dug a hole', *ušΔdΔγłkét* 'we incl asked for it'.

The reduction of the vowel that occurs in the second component of the Doig Beaver first duoplural *šΔ...-łD* (*ł* and not *l̥*) is not explained. (The reflex of the vowel of **iʔ* 'transitional' is also reduced.)

2.4 Other morphophonemic features of the first duoplural subject prefix

In the previous section, we have seen that the Doig Beaver first (inclusive) duoplural subject prefix has a component **sə* which occurs in the same prefix position as the deictic subject prefixes and that moreover the component *ʔD < *iʔD*, which historically enshrines the first duoplural prefix, in certain paradigms can be dropped so that only the deictic part of the prefix, deriving by analogy from the **s*-conjugational **sə*, remains. Further, when only the deictic part of the prefix remains, the perfective marker **ŋə*, which is usually only overt with the non-deictic persons, occurs in the *γ*-perfective in the first (inclusive) duoplural in Doig Beaver.

There are other respects also in which the first duoplural subject prefix exhibits 'deictic-like' characteristics in some Athapaskan languages. In Slave (Slavey-Hare-Mountain-Bearlake), the assignment of tone to the first duoplural prefix strings of conjunct **s*-imperfectives and **s*-perfectives parallels its assignment to the prefix strings of the deictic persons. In the other nondeictic persons, the syllable immediately preceding the conjunct derivational prefix (if there is one) is assigned the tone of the **s*-conjugational prefix. In the first duoplural, and in the deictic persons, the syllable of the conjunct derivational prefix is assigned the tone (Rice 1983). For example, repeating prefix strings already given in section 2.1, in the Slavey dialect (in which **s > θ*), the prefix strings of the **s*-perfective are 1sg *ʔde-*, 2sg *ʔdɛ-*, 3sg *dé-*, 1dpl *déθʔD-*, 2dpl *ʔda-*, 3dpl *gedé-*, unspec *tsʔedé-* for a zero-classifier verb; 1sg *ʔdeh-*, 2sg *ʔdɛh-*, 3sg *déh-*, 1dpl *déθʔ-*, 2dpl *ʔdah-*, 3dpl *gedéh-*, unspec *tsʔedéh-* for a *d*- classifier verb.

Another 'deictic-like' feature of the first duoplural subject prefix concerns the 'peg element'. In Babine and in Sarcee, the peg element is found in the first duoplural (first dual in

Babine) in the disjunct zero-imperfective and zero-perfective (that is, in the absence of any conjunct derivational prefix). In Babine, the peg occurs in word-initial position only. The peg element is *ə* and the first dual prefix is *dəD*; for example, *ədər'aʔ* 'we two are eating it', *ədəlɬəl* 'we two are swinging it', *ədədli* 'we two are'. In Sarcee, the peg occurs in word-initial position or immediately preceded by disjunct prefixes. The peg is *i*, and the first duoplural prefix is (*s*)*āàD*; for example, *Isáàtsīy* 'we are crying', *Isāàlùh* 'we will lasso it', *nāàsāàzld* 'we are standing' (disjunct prefix *nà*), *táásáàʔòh* 'we will put it down' (disjunct prefix *tá*). Compare these with the **s*-perfective forms *sáàlìh* 'we tasted it', *šāàdžó* 'we are old', *tāsáàʔóh* 'we have put it down' (Cook 1978, 1984).¹⁵

Like others of the conjunct verbal prefixes, the Athapaskan **sə* conjugational prefix is multifunctional (as, for example, **iʔ* 'transitional', section 2.2.1), and in Athapaskan languages which have distinct negative verb forms, it functions as the nonperfective negative prefix. In this function, it generally precedes the modal prefixes in the nondeictic persons but metathesizes with both the progressive and the optative prefix in the deictic persons of progressive, future (inceptive-progressive), and optative negatives. In Babine, the metathesis occurs in the first dual also under certain conditions (in Carrier and Chilcotin, which both have distinct negative verb forms, the cognate subject prefix is vowel-initial and the metathesis does not occur). The following are progressive negatives in Babine:

we- s- e- dəD-ʔəts

neg-*sə-prog-1dl-stem(neg)

wesedəʔəts 'we two are not walking';

we- d- i- s- dəD-ʔ- bəts

neg-də-prog-*sə-1dl-cl-stem(neg)

wedisdəlbəts 'we two are not rolling it'.

(The allomorphs of the progressive are conditioned by syllable- initial fortis and lenis consonants.) Without going into further details, note that metathesis of the prefixes occurs only when a conjunct derivational prefix is present (as in the second example). The conditioning factor for the metathesis in the optative negative is the same:

we- s- o- dəD-liʔ

neg-*sə-opt-1dl-stem(neg)

wesodəliʔ 'let us two not be';

we- n- u- s- dəD-ziʔn

neg-nə-opt-*sə-1dl-stem(neg)

wenusedəziʔn 'let us two not think'.

3. The meaning of the 'first duoplural' subject prefix

Our discussion will extend beyond consideration of the first duoplural subject prefix alone and we shall be considering the first duoplural pronominal prefixes in non-subject functions (section 3.2) as well as in subject function (section 3.1).

3.1 The 'first duoplural' pronominal prefixes in subject function

It is not possible to discuss the meaning of the prefix which is the subject of this paper without reference to the other Athapaskan prefix which, depending on the given language, may also function semantically as a first duoplural subject prefix. We will refer to both the prefixes (and others in the course of the discussion) by their reconstructions (*əŋəʔdəD>) *iʔdəD and *tšw'ə respectively (for the *tšw-series, see Krauss 1964).

*tšw'ə is found universally, or almost universally, in Athapaskan, with an indefinite first or third person meaning and the term 'unspecified (human)' has been chosen by Rice (p.c.) to cover the senses 'we in general' and 'one, someone'. (See section 3.3 for discussion of 'impersonal first plural' forms.) Depending on the language in question, the prefix may also have the sense of 'first duoplural' or 'first plural (more than two)'.

We have already noted that the prefix *iʔdəD may be a first duoplural or a first dual subject prefix. In the languages in which it is first dual, *tšw'ə is the first plural. The dual meaning of *iʔdəD is found in three fairly widely scattered language areas, in Babine and Carrier, in some Fort Yukon Kutchin (recorded by Sapir), and in Bearlake and Dogrib.

In Fort Yukon Kutchin, Sapir glossed both prefixes in various ways. Pairs of glosses found in the data are equivalent to 'first dual' and 'first plural/unspecified', or 'we definite' and 'we indefinite/ unspecified' for *iʔdəD and *tšw'ə respectively. The terms 'we definite' and 'we indefinite' are Sapir's and seem to include the meanings 'a few of us' and 'several of us, an indefinite number of us, we in general' respectively. When verb stems are marked for number, *iʔdəD generally occurs with dual stems but is also found with plural stems. Sapir's data dates from 1923, and in

Mueller's more modern data from Fort Yukon, **iʔdəD* is rarely used and the first duoplural prefix is **tšw'ə*.

In Slave generally, **iʔdəD* is 'first duoplural' and **tšw'ə* is 'unspecified'. Rice (1983:416) reports that for at least some speakers, the first duoplural variants *iD* and *əiD* are first dual and first plural respectively in the Slavey dialect (see section 2.2.1 concerning the forms of the prefix). But in the Bearlake dialect, the reflex of **iʔdəD* is 'first dual' and **tšw'ə* is 'first plural/unspecified'. In Dogrib also, **iʔdəD* is first dual though there is evidence to suggest that it may also denote 'a few of us' and it has been recorded with verb stems marked for plural number.

In Doig Beaver, the meanings of **iʔdəD* and **tšw'ə* are 'first duoplural inclusive' and 'first duoplural exclusive' respectively. It is **tšw'ə* rather than **iʔdəD* that has sometimes been given the dual meaning but both can occur with verb stems marked for either dual or plural number. **tšw'ə* is the usual first duoplural prefix in Doig Beaver and **iʔdəD* is only commonly used in the optative in exhortation, 'let us, me and you all'. In Sekani also, the 'inclusive-exclusive' distinction occurs but only characterizes the dual; **iʔdəD* is 'first dual inclusive' and **tšw'ə* is 'first dual exclusive'. **tšw'ə* is also 'first plural' and, rarely, 'unspecified' (Hargus 1985a).

3.2 The 'first duoplural' pronominal prefixes in non-subject functions

If the prefix **iʔdəD* is derived in this secondary way, this is some explanation of why there is no direct or indirect object or possessive prefix which uniquely pairs with it. Each of the other nondeictic subject prefixes pairs with a non-subject

prefix which is related to it in shape as well as in meaning and functions as the direct and indirect object and possessive pronominal prefix of the same person and number.¹⁶ As is well-known, among the pronominal prefixes the second duoplural non-subject prefix **nΔxwə* is often extended in semantic function to first duoplural (or first dual) non-subject.¹⁷

3.2.1 *Alternative 'first duoplural' non-subject pronominal forms*

Almost without exception, this extension in semantic function is not found unless the first duoplural (or first dual) subject prefix in a given language is **iʔdəD* and not **tšw'ə*. In other words, the subject prefix **iʔdəD* pairs with, or grammatically is in complementary distribution with, the non-subject pronominal prefix **nΔxwə* (and, of course, the second duoplural subject prefix **Δxw* pairs with **nΔxwə*). If **iʔdəD* is first dual, then **nΔxwə* extends in semantic function to first dual non-subject only and not to first plural.

In most Alaskan Athapaskan languages **iʔdəD* does not occur and the first duoplural/unspecified subject prefix is **tšw'ə*. The first duoplural/ unspecified non-subject prefix pairing with **tšw'ə* in these languages is **dəne/(də)ne*.

There is another non-subject pronominal prefix which, in a given language, may pair with first duoplural/unspecified subject **tšw'ə*, but in introducing that prefix, it will be necessary to digress in some degree to unify terminology across languages.

Hoijer (1971) lists a 'fourth person' non-subject pronominal prefix **xwə* occurring in certain Athapaskan languages, including Navajo. The same term 'fourth person' has also been applied to the Navajo subject pronominal prefix **tšw'ə*, and Akmajian & Anderson (1970) show that the

prefixes **tšw'ə* and **xwə* have parallel syntactic functions in multiclausal structures. Both prefixes are only used when the referent is human, and the Navajo **tšw'ə* is, of course, cognate with the 'unspecified' subject prefix that we have been discussing. **xwə* is an 'unspecified' non-subject prefix that, in a given language, may pair with it.

The term 'fourth person' is used in this paper to denote a (non-reflexive) third person whose referent is different from that of a third person subject in the same clause. In this sense, there can be no fourth person subject prefix. The Athapaskan fourth person non-subject prefix is, of course, **yə* which is generally nonspecific with respect to number. However, in some Athapaskan languages there is available a fourth person plural non-subject prefix **xwə* which, like 'unspecified' **xwə*, is only used when the referent is human.

It will have been noticed that both 'unspecified' **xwə* and 'fourth person' **xwə* have the same shape. There is also a third prefix **xwə* which generally has the same shape in the modern Athapaskan languages. This is the 'areal-temporal' prefix. All three prefixes occur in Slave, with the shape *go* (Rice 1983:942), and in Dogrib. In Sarcee also, the pronominal prefixes of the shape *gu* (Cook 1984) could be analysed in the same terms (that is, as three homophonous prefixes).

In this section, we have introduced three pronominal forms **nΔxwə*, **dənə*, and **xwə*, one of which, in a given language, may function as the first plural non-subject pronominal prefix (either the same form, or if not the same, then **nΔxwə*, may function as the first dual). In addition, we have noted four pairings of subject and non-subject duoplural pronominal prefixes, **iʔdəD* and **nΔxwə*, **Δxw* and **nΔxwə*, **tšw'ə* and **dənə*, and **tšw'ə* and **xwə*, paired as subject and non-subject pronominal prefixes respectively. These

pairings hold independently of the precise meaning of the prefixes (two or, at most, three of the pairings occur in any given language).

3.2.2 Further discussion of 'first duoplural' pronominal forms

Any exceptional pairings of subject and non-subject first duoplural pronominal prefixes occur in those languages in which both **iʔdəD* and **tšw'ə* occur in the semantic field of first duoplural pronominal subject. The historical pairings usually occur in conservative speech but are giving way to others in innovative speech. In the interests of space, only the conservative pairings will be given in this section.

In Carrier, **iʔdəD* 'first dual' pairs with **nΔxwə > noh*¹⁸ and **tšw'ə* 'first plural' pairs with **dəne > ne* (Morice 1932.165).

In Fort Yukon Kutchin as recorded by Sapir, it appears from an examination of his texts (Sapir 1925b) that **iʔdəD* 'first dual/we definite' collocates with **nΔxwə > nəxwə*, and that **tšw'ə* 'first plural/we indefinite' collocates with **dəne > dəne ~ dii*, and if so then these collocations represent the pairings of subject and non-subject first duoplural pronominal prefixes. In McDonald's (1911) Canadian Kutchin, **iʔdəD* is first duoplural, pairing with **nΔxwə*.

In conservative Dogrib, **iʔdəD* 'first dual' pairs with **nΔxwə > naxe* and **tšw'ə* 'first plural' pairs with **xwə > go*. *naxe* has an allomorph *xe* when other prefixes precede it. In the following pair of examples, note the agreement between *wiD* 'first dual' and *(na)xe*, and between *ts'e* 'first plural' and *go*:

weyàewida	axegele	ha
we(1dl)-look-at-it	so-they-make-us(1dl)	future
'they are going to show it to us two';		

weyàts'eenda agogele ha
 we(1pl)-look-at-it so-they-make-us(1pl) future
 'they are going to show it to us (more than two)'.

In Slave, the general picture is that **iʔdəD* pairs with **nΔxwə > naxe* and **iʃw'ə* pairs with **xwə > go*.

The first duoplural subject prefix in Vermilion Beaver is **iʔdəD* and the first duoplural non-subject prefix is the same as the second duoplural, **nΔxwə > naxΔ ~ axΔ*, *naxΔ* as possessive and *axΔ* as direct and indirect object (Goddard 1917.429). In Doig Beaver (in which **iʔdəD* is first duoplural inclusive), there is some evidence to suggest that *naxΔ* is first duoplural inclusive and second duoplural, and *axΔ* is first duoplural exclusive.

In Sekani (in which **iʔdəD* is first dual inclusive), **nΔxwə > naxə* is first dual and second duoplural (Hargus 1985a). In view of the Beaver forms, it is not clear whether the first plural form *hwə* is a reflex of **xwə* or is derived from **nΔxwə* by deletion of **nΔ*.

3.3. Meaning components of the 'first duoplural' subject prefix

Golla (1971.74) suggests that the Hupa (and the Athapaskan) **də* classifier originated in an impersonal subject prefix **də*. An additional deictic subject prefix **də* occurs in Tututni (Golla 1976a), denoting an unspecified (that is, impersonal) subject with fourth person object **yə*. Without discussing it, he also suggests similar origins (as noted in section 1.2) for the first duoplural subject prefix and for the reflexive prefix **də*.

Krauss (p.c.) notes that passive and reflexive components of meaning may be found in a single form, in the Athapaskan classifier but, interestingly, also in French *se*, and that passive, impersonal, and first person components may be found in Athapaskan reflexes of **tšw'ə* and **dənə*, and also in French *on*, German *Man*. Note also that French *se* may be reciprocal as well as passive-reflexive: *ils se flattent* 'they flatter themselves' or 'they flatter each other' (Larousse 1971). Concerning the first duoplural, Krauss (1969.65) suggests that it may have similar semantic origins to **tšw'ə*, and that **də* includes semantically an unspecified-subject/passive component (again as in French *on*).

However, an 'impersonal first plural' component of meaning is not found in any of the modern Athapaskan languages in the case of **iʔdəD*. Rather, inclusive and/or dual components of meaning are found in some of the languages (section 3.1). Suppose, therefore, that the contribution of **də-D* to the first duoplural prefix is 'first person-reciprocal-reflexive', and the contribution of **ŋə* is 'second person (singular)',¹⁹ then the PA meaning of **əŋəʔdəD* may have been 'I and you together or reflexively', possibly also 'dual' or at least 'paucal'.

4. Review

In the latter part of this paper, we have quoted a reconstruction **iʔdəD* for the first duoplural subject prefix. This is the Proto-Babine-Carrier reconstruction of the prefix (section 1.3). The element **də* in the reconstruction is confirmed by certain of the PCA languages also (section 1.2); **D* is manifested universally in the Athapaskan first duoplural. The full reconstruction is **əŋəʔdəD*, **əŋə*

deriving from consideration of the Apachean languages (section 1.1), in the majority of which nasalization occurs in the modern first duoplural. McDonald's relict forms of the first duoplural also give some support to an element $*\eta\theta$, and the pre-Kutchin reconstruction suggested is $*(\theta)\eta\theta^?d\theta$ (section 1.3).

No origin for the component $*^?$ can be suggested. However, its presence in the reconstruction is plainly necessary to account for the tone carried by the first duoplural in tonal Athapaskan languages.

Sarcee is the only language in which the tone is glided in the first duoplural and on account of the Sarcee form of the prefix, a reconstruction that is at least disyllabic is necessary. Rather than the trisyllabic reconstruction $*\eta\theta^?d\theta D$, suppose the reconstruction posited were $*\eta\theta^?d\theta D$. The second vowel of the first duoplural in Sarcee carries the low tone so that $*^?$ must occur in the second syllable of the pre-Sarcee reconstruction. If the PA reconstruction is $*\eta\theta^?d\theta D$ (without initial $*\theta$), in pre-Sarcee a metathesis would have to occur in which $*\eta\theta^?-d\theta-D > *d\theta-\eta\theta^?-D$.

A metathesis has been hypothesized tentatively for northwest Canadian Athapaskan languages. In these languages, a reflex of $*s$ frequently occurs in the first duoplural and the hypothesis concerning the metathesis was made following the suggestion that the $*s$ -conjugational prefix attached to the first duoplural in $*s$ -conjugational paradigms (section 2.1) and extended to non- $*s$ -conjugational paradigmatic forms of the first duoplural (subsections of section 2.2).

The metathesis was framed in the form $*i^?-d\theta-D > *di^?D$. This metathesis could not have occurred in Proto-Babine-Carrier and in all likelihood not in Proto-PCA either. It could have occurred in Proto-Apachean, in the revised form of the metathesis $*\eta\theta^?-d\theta-D > *d\theta-\eta\theta^?-D$, and indeed a nasal

element (required in the Proto-Apachean reconstruction) could carry through to a relatively late stage: $*\eta\theta^?-d\theta-D > *d\theta-\eta\theta^?-D > *di(\eta)^?D$. It is then necessary to drop initial $*d$ in Proto-Apachean and in pre-Sarcee. Obviously, it is possible to 'ring the changes' in various ways in deriving the modern forms of the first duoplural subject prefix.

Owing to the composite form and meaning of the first duoplural subject prefix (see especially section 3.3), there is no one Athapaskan first duoplural non-subject pronominal prefix with which it pairs uniquely (subsections of section 3.2).

Notes

1. This paper is a revised version of a paper of the same title given at the Athapaskan Symposium, University of New Mexico, Albuquerque, 7 July 1980. Unpublished data sources used in this paper, in the form of fieldnotes, organized worksheets, or by personal communication, are as follows: R. Collins for Upper Kuskokwim, V. Golla for Tagish, K. Hale (by courtesy of M. Krauss) for Tahltan, H. Hildebrandt and G. Story for Babine, M. Holdstock, J. Holdstock, and G. Story for Doig Beaver, P. Howard for Slavey, E. Jones and M. Krauss for Koyukon, J. Kari for Ahtna, Holikachuk, and Ingalik, Q. King for Chilcotin, M. Krauss for Han, Kwalhioqua-Tlatskanai, and Tanana (Minto), J. Leer for Tanacross, P. Milanowski for Upper Tanana, R. Mueller for Kutchin, C. Naish and G. Story for Dogrib, K. Rice for Slave, J. Ritter for Tutchone, E. Sapir (by courtesy of R. Mueller from fileslips organized by M. Haas) for Kutchin, and R. Walker, E.V. Pike, and G. Story for Central Carrier.

2. The term 'deictic persons' will be used to include third person singular with those persons marked by a 'deictic' subject prefix since all share certain morphophonemic characteristics. There is, of course, no third singular deictic subject prefix.
3. Since the earlier versions of this paper were written, the following observation by Krauss (1969, footnote 11) has been noted: '... as for the *-i-* element of the Navaho first person plural subject pronoun, *-í-* [sic] in Apachean other than Navaho and Chiricahua, this is conceivably an extension of the *-i(n)-* allomorph of the second person singular subject pronoun; ...'.
4. There are two major Sekani areas, McLeod Lake and Finlay River (Ware). Recent fieldwork by S. Hargus confirms that the prefix in Sekani carries low tone, and that Sekani is low-marked (Hargus 1984, 1985b).
5. Upper Kuskokwim and Tanana apparently manifest tone in stems indirectly (Krauss 1978.9) but since these languages lack the cognate prefix, the presence of tone in them is not relevant to this paper. Upper Tanana, Tanacross, and some Koyukon also apparently have some sort of tone system (p.43).
6. See note 8.
7. For Slavey, Hare, Mountain, and Bearlake, it is only true that the reflex of **s* may occur initially to the first (duo)plural prefix if there are paradigms in which the reflex occurs which are not **s*-perfectives or **s*-imperfectives (or **s*-optatives). This is true of the other languages also, of course, but in describing Slave (= Slavey-Hare-Mountain-Bearlake), Rice (1983) has only recognized a reflex of **s* in the first duoplural in the Slavey dialect. The reason for recognition in this dialect is that in Slavey there are

disjunct zero-imperfectives in which θ (the Slavey reflex of $*s$) occurs word-initially or immediately following a disjunct prefix in the first duoplural; for example, $\theta\acute{it}'\acute{e}h$ 'we are cooking it' (see section 3.1 concerning the meaning of the prefix). Considering the paradigm as a whole, it plainly cannot be recognized as an $*s$ -imperfective since there are no other word-initial θ in the paradigm. Apart from these zero-imperfectives in Slavey, in all other paradigms in Slavey, Hare, Mountain, and Bearlake, the reflex of $*s$ occurs initially to the first duoplural in $*s$ -perfectives and $*s$ -imperfectives, and to the first duoplural forms of ' $*i?$ -verbs' (that is, verbs containing the conjunct derivational prefix \acute{i} 'transitional', see section 2.2.1) (though not in all first duoplural $*i?$ -verb forms).

Because of the occurrence of the reflex of $*s$ in the first duoplural of some $*i?$ -verb forms, and because of certain features in the optatives of these verbs, Rice considers these to be $*s$ -conjugational; that is, that the imperfectives, perfectives, and optatives of certain $*i?$ -verbs are $*s$ -imperfectives, $*s$ -perfectives, and $*s$ -optatives.

The present paper suggests that the reflex of $*s$ in the first duoplural has an analogical source (see the present section) and therefore it is not necessary to analyse any $*i?$ -verb as $*s$ -conjugational (though in some cases an $*i?$ -verb has an analogical $*s$ -optative).

8. In some cases it is difficult to ascertain whether data is Tahltan or Kaska. In part this is due to the mixing of peoples that has occurred in this dialect area. The original Tahltan area centred on Telegraph Creek on the lower Stikine River in British Columbia. The Tahltan were the middlemen in aboriginal trade between Tlingit on the coast and Kaska in the Cassiar Mountain area, a

trade which undoubtedly produced many shifts in the Cassiar population (Honigmann 1954). With the coming of the white trader, there was increased movement of peoples and 'it thoroughly scrambled the Cassiar population'. Data which has been called Tahltan has contained either *s* or θ for the reflex of **s*. The *s* reflex occurs in data recorded by Hale at Telegraph Creek, by Krauss from a Tahltan speaker in Fairbanks (from Telegraph Creek?), and by Golla (1976b). The θ reflex occurs in data recorded by Cook (1972) (recorded at Lower Post in the Kaska area?) and Hardwick (1984) at Telegraph Creek; Nater (1986) finds θ to be the regular reflex of **s* in Iskut Tahltan though in some idiolects *s* or 'lisped' *s* occurs.

9. Note that 'disjunct' in the context of the occurrence of overt reflexes of the **s*-conjugational prefix includes certain of the leftmost conjunct prefixes (see especially Rice 1983.438f, 466f, 474f).
10. Kari (1979.225) calls the cognate verbs in Ahtna 'uncategorized transitionals' since they cannot be assigned to a theme category.
11. The reflex of **s* in the first duoplural is found consistently in disjunct zero-imperfectives and not in conjunct zero-imperfectives in Cook 1984. However, in Cook 1974 the reflex of **s* is found in some conjunct zero-imperfective forms.
12. A first duoplural of a verb cognate with **iʔ*-verbs 'pick up' may be represented in a form *nádīśááʔōh* 'we are going to take it' but if so other forms from the same Sarcee paradigm demonstrate that this is an **s*-perfective and not the expected zero-perfective (Cook 1984.215, 217).

13. The main source of data for Sarcee is Cook 1984. Additional progressive forms are found in Cook 1974. However, data between these two sources is not completely consistent (see note 11), and there is at least one form in Cook 1974 whose paradigmatic membership is not clear. Sarcee has no forms which are readily identified as cognate with optatives in other Athapaskan languages.
14. This is a restatement of Hargus' analysis and neglects some of the details.
15. Cook (1984) has second thoughts about analysing the vowel in question as the peg element but in the light of the comparative evidence and the 'deictic-like' characteristics of the first duoplural, there seems little doubt that the peg analysis is the correct one.
16. Concerning the pair $*\Delta xw$ 'second duoplural subject' and $*n\Delta xw\theta$ 'second duoplural non-subject', Krauss (1965a.25) notes the PA second plural subject prefix $*\Delta xw$ and Eyak *lax* and suggests the Proto-Athapaskan-Eyak (PAE) reconstruction $*n\Delta xw$ for the second plural subject prefix. Therefore all the PAE second plural pronominals, subject and non-subject, are reconstructed as $*n\Delta xw(\theta)$ (Krauss 1969). For the Eyak pronominal system, see Krauss 1965b.
17. Krauss (1969.82) speaks of 'the extension widely in Athapaskan of the second person plural object pronoun to first person plural. It is in fact impossible to reconstruct any first person plural pronouns common for PAE [Proto-Athapaskan-Eyak], or even PA for all Athapaskan.'

18. Morice distinguishes *nox* 'first dual', and *nuh ~ noh* 'second duoplural' but both appear to be reflexes of **nΔxwə*. The modern reflex of *nox* is *noh* (see Story 1984).
19. See note 3.

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Some Linguistic Insights Into Dena'ina Prehistory*

James Kari

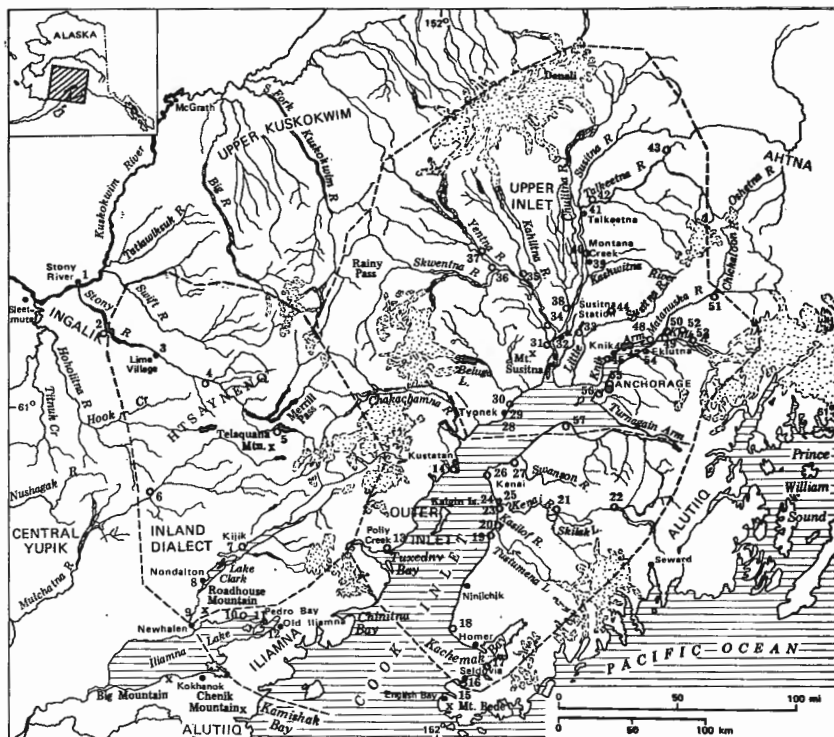
0. Introduction

The Dena'ina (or Tanaina) have held a conspicuous position in Athabaskan studies. They are the only Northern Athabaskan people with a significant amount of territory on saltwater. There is considerable cultural and linguistic diversity within their westward leaning, horseshoe-shaped language area (figure 1). This language area is oddly shaped in that it is bisected by the Southern Alaska Range and includes, west of the Range, three major streams in the Kuskokwim drainage, as well as Lake Clark and northern Iliamna Lake, and, east of the Range, most of Cook Inlet basin. The literature on the Dena'ina abounds with speculation about their prehistory.

Prior to Euro-American contact in the late eighteenth century, the Dena'ina had what is recognized to be one of the richest resource bases in Alaska. No other Northern Athabaskan people had as rich a mix of land and water foods, and the Dena'ina aboriginal population, which has been estimated at between 3000 and 5000 persons, was larger than any other Northern Athabaskan language group.

Figure 1.
Principal Dena'ina settlements, 18th through 20th centuries.

- Abandoned Dena'ina settlement
- Currently occupied settlement (numbered, mainly Dena'ina; unnumbered, non-Dena'ina)



- A. Inland dialect. 1, Stony River village (partly Ingalik, Yupik and Dena'ina); 2, Htsit; 3, Lime Village; 4, Qeghnilen; 5, Telaquana Lake village; 6, Mulchatna villages (several sites); 7, Kijik (several sites); 8, Nondalton; 9, Newhalen (mainly Yupik, formerly Dena'ina).
- B. Iliamna dialect. 10, Chekok; 11, Pedro Bay; 12, Old Iliamna, Pile Bay (several sites).
- C. Outer Inlet dialect. 13, Polly Creek; 14, Kustatan (several sites); 15, Ts'eslahtnu, Old Seldovia; 16, Seldovia; 17, Soonroodna; 18, Kasnatchin; 19, Cape Kasilof village; 20, Kalifornsky; 21, Stepanka's; 22, Sqilant; 23, Ch'anilnat; 24, Shk'ituk't; 25, Kenai; 26, Nikiski No. 1; 27, Tiduqilts'ett.
- D. Upper Inlet. 28, Old Tyonek (several sites); 29, Tyonek; 30, Chuitt River village; 31, Alexander Creek village; 32, Susitna Station (several sites); 33, Redshirt Lake village; 34, Tsuk Gayeh; 35, Bentalit (several sites); 36, Tiq'atl'ena (several sites); 37, Donkey Creek Lake; 38, Kroto Creek village; 39, Montana Creek; 40, Tsuk Gayeh; 41, Talkeetna; 42, Chunilna Creek village; 43, Stephan Lake village; 44, Nancy Lake village; 45, Fish Creek village; 46, Knik; 47, Cottonwood Creek village; 48, Tuhnaghitkitst; 49, Niteh, Old Knik; 50, Ni'atsa'it'ut; 51, Chickaloon; 52, Hutnaynut'i; 53, Swan Lake village; Eklutna; 55, Tak'at; 55, Nuch'ishtunt; 57, Point Possession village.

From the times of the earliest recorded encounters between natives in Cook Inlet and Euro-Americans there has been commentary about the Dena'ina and their use of certain Eskimo-like items such as kayaks and sea mammal products, and their relationship to other Athabaskan peoples of interior Alaska. In 1778 Cook concluded that the people he encountered in the Upper Inlet between Kustatan, Point Possession, and East Foreland were of the same nation he had met previously in Prince William Sound, i.e. Chugach Eskimo (or Alutiiq) (Cook 1967:371). However, a ten-word vocabulary collected by Cook's surgeon William Anderson at an unknown location contains eight numerals that are definitely in the Upper Inlet dialect of Dena'ina (Anderson 1778). Bancroft (1886: 207) suggested that the people Cook met at Point Possession were Eskimo who "in those days occupied more of the coast of Cook Inlet than they do today." The first ethnographic sketch of the Dena'ina, by Rear Admiral Wrangell who was governor of Alaska from 1830 to 1835, presented a hypothesis that the Dena'ina migrated into Cook Inlet.

Presumably the Kenai [Dena'ina] came to the land they now occupy from over the mountains. They are a nomadic mountain people who came to the coast, and half of them became settled. They retain birchbark canoes in which they used to travel on the rivers and lakes, and they also use baidars, large and small which they cover with *lavitak* (the treated hides of sea animals). They probably learned the art from the Kadiaks or Chugach, to whom they are much inferior in skill in sea travel. Their favorite occupation is still hunting wild animals in the forests beyond the mountain ranges (Wrangell 1980 [1839]:56-57).

Both Birket-Smith and Sapir recognized the importance of the Dena'ina in the region when they directed their students de Laguna and Osgood to Cook Inlet in the early 1930's. De Laguna's archaeological study (1934) and Osgood's ethnography (1937) are the basic sources upon which the recent archaeological, linguistic, and ethnographic research

has drawn. Since 1970 there has been renewed interest in Dena'ina studies. A recent bibliography lists over 140 publications on the Dena'ina between 1970 and 1983 (Jones 1983), and there is considerable unpublished material on file at Alaska Native Language Center, including lexical files for the future *Dena'ina Dictionary*, as well as texts, and tape-recordings.

Wrangell's hypothesis from the 1830's was substantiated to some extent by de Laguna's 1934 study, when the Kachemak Bay sites revealed early occupation by Eskimo peoples. De Laguna (1947:3) states that the Dena'ina "had pushed down into Cook Inlet in relatively recent prehistoric times, dislodging an earlier Eskimo population." Ironically, the archaeological record throughout Cook Inlet, as summarized in de Laguna 1975 [1934] and Workman 1978, continues to be best known at earlier time depths. Eskimo peoples lived in Kachemak Bay for over 2000 years, but following about 500 A.D. the area was depopulated. Some late proto-historic sites in the Kachemak Bay area are identified as Dena'ina. Dumond and Mace (1968) surveyed several sites in the Knik area and concluded that the obvious Dena'ina materials were historic, and that the presence of labrets, clay pots, and stone lamps in the area circa 1000 A.D. implies that Eskimo peoples were using the area at least seasonally at that time. However, Workman has noted that very little archaeological data anywhere in Cook Inlet basin reveal much about Dena'ina prehistory. The few major sites recognized by the Dena'ina themselves that have been excavated, such as Kijik on Lake Clark, have not produced old materials. With this bare evidence Dumond (1978:39) has maintained that the Dena'ina reached the shores of Cook Inlet well after 1000 A.D. and that their coastal adaptation was "rudimentary". Workman (1978:85) has countered that the Dena'ina may have been in the middle and upper Inlet areas a few centuries earlier and may have, by their presence here, caused the Eskimo people to split from the Inlet. Dzeniskevich (1981) feels that the Dena'ina

were basically an interior hunting people and that they did not fully exploit their coastal resource base.

In this paper I will summarize some of the recent linguistic, ethnographic, and ethnohistoric data that bear on issues of Dena'ina prehistory. As Dumond (1978:41) has noted, in contrast to Eskimo sites, "Athapaskan sites are notoriously lacking in material remains that can provide information for the archaeologist."¹ Since the archaeological record for the Dena'ina is so meager, it is appropriate to return to the methods Sapir masterfully presented in his classic papers "Time Perspective in Aboriginal American Culture" (1916) and "Internal Linguistic Evidence Suggestive of the Northern Origin of the Navaho" (1936) (both in Sapir 1949). In Alaska there has as yet been only superficial interchange between specialists in archaeological prehistory and the few scholars who deal with linguistic data. Areal linguistics involves tracking and analyzing diffusions and innovations within the dialects of a single language, within the genetically related languages, and between unrelated neighbor languages. There is now fairly good lexical coverage for many of the Alaska Native languages, and it is important that lexical data, especially toponymic and geographic data, be incorporated into models of regional Alaskan prehistory. Our knowledge of the past one to two thousand years of Alaskan prehistory can be amplified by the Sapirian approach. In the case of the Dena'ina there is a large amount of interrelated evidence that bears on issues such as the oldest home area of the Dena'ina, a sequence of Dena'ina migrations into Cook Inlet basin, and the nature of their marine adaptation.

1. Dena'ina and proto-Athabaskan

In his 1916 paper, Sapir (1949:455) speculated that the two linguistic stocks last to arrive in North America were

probably Eskimo-Aleut and Na-Dene. This notion was made more explicit in a study by Greenberg, Turner, and Zagura (1983) in which a period of 6000 years is estimated for a Na-Dene migration from Siberia to Alaska. Various specialists such as Morice, Sapir, Hoiyer, and Krauss have suggested that because of the deep divisions in the Northern Athabaskan languages, in contrast to the superficial divisions of the Pacific Coast and Southwestern (Apachean) languages, the northern area must represent the *urheimat* of Proto-Athabaskan (PA). Krauss (1978:805), in his most specific discussion of Eskimo-Aleut and Na-Dene homelands, notes the virtual absence of widely dispersed borrowings between Eskimo-Aleut languages and Na-Dene languages. He assumes that these groups were distantly separated, proto-Eskimo-Aleut being in western Alaska and the Bering Sea, and proto-Athabaskan and proto-Na-Dene being in the Cordilleran area of eastern Alaska, the southern Yukon Territory, and perhaps northern British Columbia. The modern Eskimo-Athabaskan boundary which extends all along the northern treeline from South central Alaska to Hudson Bay, represents later territorial realignments. Thus the modern Athabaskan territories of the Yukon and Kuskokwim rivers may reflect a gradual downstream movement from the posited eastern homeland.

The Dena'ina, in terms of Krauss' view, would be, along with Ingalik, at the forefront of a westward advance to where they began to share boundaries with Central Yupik and Alutiiq peoples. Krauss (1973:948) has remarked that it is no coincidence that the shift and reduction of the four PA full vowels to three in Dena'ina and Ingalik is a phonological convergence with the neighboring Yupik and Alutiiq Eskimo languages, which also have three full vowels. Likewise the reduction of the three PA reduced vowels to one, ə, in Dena'ina and Ingalik has been influenced by the Yupik and Alutiiq systems which have a single reduced vowel. Yet, as we shall discuss later, there has never been any large amount of vocabulary borrowed in

either direction between these two Eskimo and two Athabaskan languages.

Some scholars have suggested that the Dena'ina have ancient ties to at least some part of their language area. Dyen and Aberle (1974:380-383) have stated that the Dena'ina language area may be the proto-Athabaskan homeland. In their reconstruction of the PA kinship system, Dyen and Aberle make note of the relatively rich resource base and semi-sedentary villages of the Dena'ina which would have made it top-priority territory to ancient people entering Alaska across the Bering Straits. They even speculate that the PA homeland might then have included a coastal region. (See 3.4 and the discussion of Dena'ina marine lexicon.) The Danish Eskimologist Hammerich (1960:87-88) has suggested that the "inland paradise" of Iliamna Lake may have been the center of the proto-Eskimo-Aleut homeland, and that the deep separation between Aleut and the Eskimo languages is the result of the stock being "divided in two by an Indian wedge in the Iliamna area". Hammerich speculates that this division could have occurred some 3000 years ago. In 3.2 I summarize the recent documentation on Iliamna area warfare as it bears on Hammerich's "Lake Iliamna hypothesis".

Two different views of population movements within the Dena'ina language area have appeared in the literature. VanStone and Townsend (1970), after their excavations at Kijik on Lake Clark revealed little aboriginal material, concluded that the Dena'ina moved from Cook Inlet into Lake Clark, as well as to the Stony and Mulchatna rivers perhaps in the seventeenth or eighteenth century, or possibly even after Russian contact. I have presented an alternative view in several publications (Kari 1975, 1977a, and Kari and Kari 1982). Drawing upon dialect data and information on Dena'ina territory, I have suggested that in ancient times the Dena'ina homeland was west of the Alaska Range on the Stony and upper Mulchatna rivers, and that there have been a series of migrations into the language area as we know it at the time of historic contact.

I am assuming that, based upon the distinctive character of the Dena'ina language, sometime in the past speakers of a language ancestral to modern Dena'ina had a territory that was relatively isolated from the main corridors of Alaskan Athabaskan, the Yukon-Tanana drainages. While I do not think we can claim that this area west of the Alaska Range is the PA or proto-Na-Dene homeland, it does seem that the Dena'ina have long-term associations with the piedmont plateau west of the Range they call *Htsaynenq'*. The Dena'ina may have been there 3000 years ago, if not earlier. My second choice for a proto-Dena'ina homeland is the upper Susitna River. See section 3.3 and note 7.

In evaluating the various theories about Dena'ina prehistory it should be kept in mind that the full extent of the territory covered by the Dena'ina at the time of contact has only recently been determined through Krauss' unpublished dialect survey of the early 1960s and in my ethnogeographic work in the 1970's. Wrangell 1839, Petroff 1884, and Osgood 1937 defined this territory to include only the Dena'ina of Cook Inlet basin and Lake Iliamna. Osgood's ethnography made only brief mention of the then but vaguely known Lake Clark area. The geologist Brooks (1911:22) even stated that the Alaska Range formed an "almost impassable barrier" between the Natives of the Kuskokwim and Cook Inlet. Neither Osgood nor Brooks had access to Zagoskin (1967:268) who observed in 1844 from the middle Kuskokwim River that the "Ttynay of the Tkhalkhuk [Stony] River belong to the tribes occupying the shores of Kenai Gulf." Dena'ina occupation of the Mulchatna and Stony rivers was first noted in Townsend 1965. Dena'ina presence in the Hoholitna and Swift river areas and the system of known passes through the Alaska Range were first published in Kari and Kari 1982. Furthermore, there has still been no archaeological work at well known Dena'ina locations on the Mulchatna or Stony Rivers. The extent of Dena'ina use of the Upper Inlet area has been documented only recently (Fall 1981, Kari and Fall 1987).

2. Dena'ina dialect divergence

All of the Dena'ina dialects are mutually intelligible, although full understanding is difficult between speakers, for example, from Lime Village and Susitna, or between Kenai and Eklutna, or between Tyonek and Lime Village. It might be claimed that of the Alaskan Athabaskan languages, as they are presently defined as eleven languages, Dena'ina has the deepest degree of dialect differentiation. It seems to have greater differentiation than do dialects of Koyukon or Kutchin. The two neighboring languages, Ingalik and Ahtna, are very homogeneous in comparison to Dena'ina.²

Figure 2 is a presentation of the Dena'ina orthography and sound system. In my 1975 article I presented the following classification of Dena'ina dialects:

- I. Upper Inlet (Tyonek, Eklutna, Knik, Susitna, Kroto, Montana Creek)
- II. Lower Inlet
 - a. Outer Inlet (Kenai, Seldovia, Kustatan, Polly Creek)
 - b. Iliamna (Pedro Bay, Old Iliamna)
 - c. Inland (Nondalton, Lime Village, Stony River)

Figure 2. The Dena'ina alphabet.

Consonants

	bilabial	alveolar	blade	velar	uvular	laryngeal
stops						
plain	b	d dl dz	(j)	g	gg	
aspirated		t tl ts	(ch)	k	q	
glottalized		t' tl' ts'	(ch')	k'	q'	
fricatives						
voiceless		ʃ s	(sh)	(x)	h	hh
voiced	v	l (z)	(zh)	(ɣ)	gh	
nasals	m	n				
glides	w			y		

Vowels

full	a	i	u
reduced		e	

Notes:

- The consonants in parentheses are not present in the Upper Inlet dialect.
- gg symbolizes [G], x symbolizes [x̥], h symbolizes [x̥], hh symbolizes [h], ɣ symbolizes [ɣ], e symbolizes [ə].

This classification gives only a general idea of the relationship between the dialects. There are isoglosses that cut across these divisions in several directions. The distinction between Upper and Lower Inlet is based on the reduction of the consonant system in Upper Inlet. Whereas

the three Lower Inlet dialects have six consonant series, Upper Inlet has five, an areal trait it shares with the neighboring Ahtna language. Also Upper Inlet has merged *z* and *zh* with *y*, a merger which presents many ambiguities to others, both to Lower Inlet Dena'ina speakers and to Ahtnas. The Upper Inlet dialect is the most divergent of the dialects. Many lexical and cultural patterns, as well as phonological patterns link Upper Inlet to Ahtna. The common Upper Inlet-Ahtna phonological patterns include the consonant mergers, the pattern of stress on stem syllables, and a very rapid speech rate. These patterns are discussed in more detail in Kari 1977a.

Dena'ina's lexical divergence, as reflected in Osgood's (1937) word lists, has attracted some attention among linguists (Landar 1960, Gleason 1960, Pinnow 1964). In Hoijer's 1962 lexicostatistic calculations based on Osgood's vocabularies, the shared cognate percentage on the 100-word list between Dena'ina and another Athabaskan language was 62%, with Ahtna. This figure was 72% and higher for the seventeen other languages in Hoijer's study.

The *Dena'ina Noun Dictionary* (Kari 1977b) illustrates the wide degree of phonological and lexical divergence within the Dena'ina dialects. In the dictionary over 6000 forms are listed for about 4000 entries. Because of the great geographical diversity of the language area, many lexical items follow local patterns. For example, 52 month names and 214 bird names for 125 separate bird species have been recorded in the Dena'ina dialects.

It is common for the same word to differ in vowel correspondences in the Dena'ina dialects. There are a great many exceptions to the usual pattern where the PA vowels, **u* and **a* become Dena'ina *i* and *u*, respectively. Compare several words in three of the Dena'ina dialects with the Ahtna forms (which have the conservative vowel qualities).

	Inland	Outer	Upper	Ahtna
'beach'	tuvugh	tubugh	tabagh	tabaaghe
'mountain'	dghili	dghili	dghelay	dghelaay

'needle'	tl'unqin	tl'inqin	tl'unqin	tl'anqaani
'grandmother'	-chikda	-chukda	-tsikda	-tsukde
'salmon'	ɬiq'a	ɬuq'a	ɬiq'a'	ɬuq'ae

These exceptional vowel qualities represent overshifts and nonshifts, and they are very consistently maintained in the local dialects. It is interesting to compare Dena'ina with neighboring Ingalik, which has undergone this same vowel shift. Both the Yukon and Kuskokwim dialects of Ingalik have very few exceptional forms.

Several generalizations can be made about lexical patterning within Dena'ina. There is no single long-term center of diffusion. There seem to be two major corridors of diffusion for much of the typical Athabaskan vocabulary, Stony River-Lake Clark-Iliamna and Upper Inlet-Outer Inlet. Upper Inlet vocabulary shows marked Ahtna influence. Eighteenth and nineteenth century Russian innovations radiate from the Kenai area to Iliamna-Lake Clark-Stony River or to the Upper Inlet area.

In comparing Dena'ina with other Alaskan Athabaskan languages, there are few phonological traits that are wholly unique to the language. Dena'ina shares the shift to a three full vowel system with Ingalik to the west. It preserves stem-final glottalized consonants as do Upper Kuskokwim and most of Ahtna. It retains the front and back velar series as do Ahtna, Ingalik, and Koyukon. Dena'ina retains six of the seven PA consonant series, with the merger of the **tš* and **kʷ* series to *tš* being unique in Alaskan Athabaskan.

Among other Athabaskans Dena'ina has a reputation for being very difficult to understand. Bilingualism between both Dena'ina and Ingalik in the west and Dena'ina and Ahtna in the east is asymmetrical, i.e. it is easier for Dena'ina speakers to understand Ingalik or Ahtna than the reverse. In large part this is due to Dena'ina's lexical divergence, rather than phonological or grammatical divergence.

Many common nouns and verbs in Dena'ina are not used in the neighboring languages. Compare some examples from Ingalik, Dena'ina and Ahtna. (Dena'ina and Ingalik forms are written here in the practical orthographies, except that the high vowels in Ingalik are here written *i* and *u*, and schwa is written *e*, to conform with Dena'ina, the high back reduced vowel in both Ahtna and Ingalik is here written *o*.)

	Ingalik	Dena'ina	Ahtna
'fire'	qon'	daz'i	qon'
'water'	ti	minɬni	tuu
'arrow, gun'	q'u	izin	q'a'
'act as shaman'	dyen	l'ek	dyen
'eat'	hun	lqet'	yaan

There are many lexical innovations within the Dena'ina dialects as well. Two conspicuous examples from the Outer Inlet dialect are *-engh'i* 'head' and *-et tugh'a* 'eye', whereas common Athabaskan roots are used in the other dialects. These kinds of innovations suggest that some concepts have been tabooed for religious reasons and then replaced by other terms. For example, the Ahtna verb theme cognate with the Dena'ina verb 'to eat' means 'swallow an object whole'. Vocabulary tabooing is common in the Athabaskan languages (cf. Sapir 1949:438). De Laguna's 1969 study illustrates in Ahtna the practice of the tabooing of names for persons as well as fish and animals. Name tabooing seems to be widespread in Dena'ina. Alternative names are especially associated with travel in mountain country. Doroshin, who travelled with Dena'ina in the Kenai Mountains in 1848, noted "In the mountains every step, every motion, almost every word is underlain with certain traditional rules... ..In the mountains they are very taciturn, and they sing no other songs besides the mountain songs... ..In the mountains 'knife' is called *k'nidultihi*, otherwise *k'izhak'i* " (Radloff and Schiefner, 1874: VII). Widespread vocabulary

tabooing is one of many indications of the basic montane rather than riverine nature of the Dena'ina.

3. Notes on Dena'ina ethnogeography and long-term land use

For the past decade there has been extensive documentation of Dena'ina: place names have been recorded, and the coverage is fairly complete for major streams and camp and village sites (Kalifornsky 1977, Fall 1981, Kari and Kari 1982, P. Kari 1983, Kari and Fall 1987). As the place name lists have become more fully annotated, an excellent data base has been established for reconstructing long term land use patterns, including band ranges and core use areas.

Some of the general principles of Dena'ina geographic knowledge are summarized in Kari and Kari 1982:13-15. The oral place names seem to be stable and conservative. Speakers list place names with great care and with obvious affection for the deep associations between the names, the ancestors, and the land. One indication of the stability of the place names is that of the approximately 60 Dena'ina place names that were recorded by Wrangell, Zagoskin and others prior to 1844, all but three or four are still remembered by today's oldest speakers.

Virtually all of the place names gathered from Dena'ina speakers are transparently Athabaskan. There is almost no evidence of a substratum of Eskimo or non-Athabaskan names. The place names and place annotations demonstrate that the Dena'ina used virtually all ecosystems in a continuous network in the language area, except for high mountain areas above 5000 or 6000 feet in elevation. There are geopolitical implications that can be drawn from this data, given the unusual geographical spread of the language on both sides of the Southern Alaska Range.

One simple fact about the Dena'ina stem for 'stream' has led to some interesting ideas about earlier movements of

Dena'ina bands. The noun stem *-tnu*, 'stream, river, creek', that occurs in hundreds of Dena'ina place names, has proved to be particularly revealing in our on-going study of the Dena'ina and their territory. In all the surrounding Athabaskan languages, Ingalik *-nu*', Upper Kuskokwim and Tanana *-no*', Ahtna *-na*', this stem does not have the *tn* cluster. For example, the name for the South Fork of the Kuskokwim River is *Idzino*' in Upper Kuskowkwim but *Idzitnu* in Dena'ina. In the following surveys of the Dena'ina dialect areas we make note of the presence of the *tn* cluster in some place names in contemporary Ahtna and Ingalik language areas. This implies certain shifts in territorial boundaries.

3.1 The western piedmont plateau, beneath *Nduk'eyux Dghil'u*

As described in Kari and Kari 1982:16-23, the dialect area we refer to as Inland in modern times includes the upper Swift River, the Stony River, the upper Hoholitna River, the upper Mulchatna River, and Lake Clark and the Newhalen River. Today's speakers, who live mainly in Lime Village and Nondalton, speak essentially the same dialect, which phonologically is slightly more conservative (in terms of distance from proto-Athabaskan phonology) than the Iliamna or Outer Inlet dialects.

There are four or five core use areas in the Inland dialect area in which clusters of winter villages with *nichit* semisubterranean houses, are reported. On the Mulchatna River the three sites are said to be at Springway Creek mouth, Chilchitna River mouth, and Chilakadrotna mouth. These places are close together, separated only by eight or ten miles. This area was abruptly and tragically depopulated in the 1890's. On the Stony River there are two or more core areas. On the lower Stony the main site is *Htsit* near Tishimna Lake. Between the Lime Hills and the well-

known site of *Qeghnilen* there are over a dozen important sites, some of which are on sidestreams. The upper Stony River and Telaquana Lake in the Alaska Range is another core area with winter sites. On Lake Clark most of the winter sites are along the northern shore between Kijik and Nondalton. These areas are linked by intricate trail systems to the Mulchatna and Stony rivers to the north and west and to Iliamna Lake to the south.

Of geographical and ecological relevance to the regional prehistory is the fact that the allied headwaters of the Stony and Mulchatna rivers are a rich salmon fishery. Each stream has four species of salmon. (However, Lake Clark and Iliamna Lake lack king salmon, the first salmon to arrive.) The Stony River is the last stream in the Kuskokwim drainage that has a major run of red salmon, which is probably the staple food source. Thus the Stony is a higher priority stream than are the streams to the north in the territory of the modern Upper Kuskokwim peoples.

It is interesting that in this general region, the area known as *Htsaynenq'*, the piedmont plateau, has a reputation for being the center of the ancient Dena'ina culture. Some speakers associate this place name, and the name of the Stony-Mulchatna River band, *Htsaht'ana*, with the adverbs *htsa*, 'first', and *htsast'a*, 'originally, anciently'. (The terms could also be related to *tsa*, 'rock'.) In any case, the sense that the upper Stony and upper Mulchatna areas are of real importance pervades the music, legends, religious traditions, and general ethnographic lore of the Dena'ina in the Stony River, Lake Clark, and Iliamna areas. The genre of stories known as *dghiliq' sukdu'a*, 'mountain stories' (Tenenbaum 1976a), and the presence of an old "high language" known as *htsast'a qenaga*, that today's most revered elders know something about, contribute to the image of the *Htsaynenq'* as an ancient homeland. Of special religious significance is the *Ch'iduchua'a* story (Tenenbaum 1976a:35-51 as told by Alexie Evan, and in manuscript in versions by Antone Evan and Ruth Koktelash), about how the belted kingfisher and the pika released the game animals

from inside the Alaska Range. Only recently have we learned that it is the mountain called *Nduk'eyux Dghil'u*, 'Mountain Which Game Enters' that is the location of this story. This is Telaquana Mountain, which is between the heads of the Stony and the Mulchatna rivers. This geographic location, which is literally at the center of the drainages in the region, has been one of the principal sacred places of the inland Dena'ina.

I have noted numerous linguistic archaisms both in the place names and in the general lexicon of the Inland dialect. It is intriguing to note that in two place names, *Vaʔts'atnaq'* for the Mulchatna River and *Taʔchatnaq'* for Hook Creek on the upper Hoholitna River, the stem for 'stream' is *tnaq'*, implying that these names retain the preshifted quality of the stem vowel. No other Dena'ina stream names end in *tnaq'*. Also there are a number of unanalyzable (but Athabaskan sounding) place names in the western piedmont. Names such as *Vaʔts'atnaq'*, *Ch'azhiya*, *Sts'a*, and *Ch'al-di*, which the most expert speakers cannot translate and etymologize, are the kind of place name which Sapir (1949:436) noted as implying antiquity of residence. The largest number of these unanalyzable place names seems to be in the Stony River drainage. I have also been struck by the large number of specialized nouns and verbs used by the Lime Village people. For example, in Lime but not in the other Dena'ina dialects there is an archaic term for 'clay pot', *isuk'*.³ Only in Lime is there a verb 'play catch' with the stem *jeghetl'*, which is linked to the noun for a 'white birch fungus', *k'vajeghetl'a*. In neighboring Ingalik this stem is attested only in the noun *yaʔdzeghodl*, which means 'ball'. Thus it seems that birch fungi were used to play catch. A stem in Ahtna *k'ots'* means 'wash object'. This has not been found elsewhere in Alaska except in Lime Village where *k'ech'* means 'wash object by rubbing it together vigorously', a semantic archaism.

There is a tradition of multilingualism and intermarriage between the Stony River Dena'ina and the Kuskokwim Ingalik. In fact the last monolingual speaker of Kuskokwim Ingalik is the wife of the chief of Lime Village. However, it seems that there is much less Ingalik influence on Stony River Dena'ina vocabulary than there is Ahtna influence on Upper Inlet Dena'ina vocabulary. Also the stony River Dena'ina and Kuskokwim Ingalik routinely have spoken or at least have understood Central Yupik. The Central Yupik have been expanding up the Kuskokwim River and absorbing small groups of Athabaskans (Oswalt 1962). Generally, it seems that relations in this westerly direction have been relatively amicable. Although there were occasional skirmishes, there is not the same pattern of tension and warfare between the Stony River Dena'ina and the Yupik of the Kuskokwim, as there is between the Lake Clark-Iliamna and Outer Inlet Dena'ina versus the Yupik or Alutiiq. Thus, it appears that the Stony River was not contested territory, whereas the Lake Clark-Iliamna Lake area was, which suggests quite clearly that the Dena'ina moved from the western piedmont into Lake Clark and then down to Iliamna Lake, where there was competition over resources. In fact, some Dena'ina elders claim that the name for Kijik village and Lake Clark, *Qizhje*, which is an obscure derivation of the verb theme 'plural run' meaning something like 'they arrived on the run', refers to early warfare on Lake Clark.

While there has been some mutual use of the lower Stony and Swift rivers between the Dena'ina, relations with the *yun'eh't'an* 'upriver people', or the Upper Kuskokwim Athabaskans, have been more distant. Since the complex of passes in the Rainy Pass area must have had some role in the entry of the Upper Inlet Dena'ina into upper Cook Inlet, it is interesting to note that no living Dena'ina knows anything in detail about the South Fork of the Kuskokwim River. Perhaps Dena'ina territory once extended further to the north on the west side of the range. There is little proof of this, but I have found two place names on the South Fork

of the Kuskokwim (Jones and Dillinger rivers) which are pronounced in Upper Kuskokwim with a *tno'* stem for 'stream'.

There is a group of place names with a stem *tnu'* (rather than *nu'*) for 'stream' in the present day Kuskokwim Ingalik and Central Yupik territories that suggests an earlier Dena'ina presence further to the west. On the lower Holitna River and adjacent areas of the Kuskokwim, several Ingalik names such as *Titnu'* (Titnuk Creek), *Tloxtitnu'* (Hoholitna River), *Halitnu'* (Holitna River), *Q'iqitnu'* (Inowak Creek), and *Teleghotnu'* (Tatlawiksuk River) (some of which have been directly borrowed into Yupik) suggest that Dena'ina territory once extended this far west. Also, the most common Kuskokwim Ingalik term for 'mountain' in place names is *deghilu'*, which must be borrowed from Dena'ina or Upper Kuskokwim as it is not used in Yukon Ingalik. There are several other indications that Ingalik is most anciently affiliated with the Yukon river and then later with the Kuskokwim River.⁴ Perhaps prior to Ingalik entry to the Kuskokwim, Dena'ina bands ranged between the Alaska Range and the Kuskokwim. The oldest people in Lime Village have stated that a century or more ago, the winter villages at the mouths of the Swift and Tatlawiksuk rivers on the Kuskokwim were at least part Dena'ina. When Zagoskin recorded names in this area in 1844 there was much multilingualism in the area. He recorded Yupik names for the Stony, Swift, and Tatlawiksuk rivers, and Dena'ina names for the Swift and Stink rivers. He also noted "We saw some huts at the mouth of the Talgotno [Dena'ina-Ingalik-Upper Kuskokwim for Tatlawiksuk River] where the upper river people stay for hunting" (Zagoskin 1967:268). If the Dena'ina were the exclusive users of these areas, it was well before the historic period.

In contrast to the somewhat fluid boundary in the direction of the Kuskokwim, there is an abrupt boundary between the Dena'ina and the downriver Yupik on the Mulchatna River and on Iliamna Lake. On the Mulchatna,

the Dena'ina seem to have remained steadfastly in the headwaters area, making no attempt to use nearby areas to the south and west (in the Taylor Mountains).

Between the Central Yupik and the Dena'ina, bilingualism was asymmetrical. Apparently the Dena'ina tended to learn Yupik more often than the Yupik learned Dena'ina. (All the older people in Lime Village have considerable passive knowledge of Yupik.) Even though the Dena'ina have borrowed major Eskimo items such as the *ulu*, *kayak*, *umiak*, fish skin clothing, seal and beluga skin lines, and stone lamps, and there was some degree of bilingualism in the region, perhaps for 1000 years or longer, there are only a few established loan words in either language. There are about 30 Eskimo-origin loan words (either from Central Yupik or Alutiiq or both) in Dena'ina. However, only six words are in all the Dena'ina dialects. In the Inland area there are fewer than 15 Eskimo-origin loan words. On the other hand, in Central Yupik less than ten Athabaskan-origin loan words have been detected (Jacobson 1983:688 supplemented by several other terms recently identified). Furthermore, most of the Athabaskan loan words in Yupik have come from Ingalik or Koyukon and not from Dena'ina.

3.2 *Ts'enhdg'hulyaŋ* and the "Lake Iliamna hypothesis"

In my 1975 article I suggested that the Iliamna dialect might be closer to Outer Inlet than to the Nondalton-Lime dialect. However, recent work with texts by Iliamna speakers show instead that the Iliamna dialect is much closer to that of Nondalton-Lime. In Kari and Kari 1982:23 we suggested that the Iliamna Dena'ina may have moved into northern Iliamna Lake as recently as 200 to 300 years ago. However, new information on the cycle of war stories, about the hero called *Ts'enhdg'hulyaŋ* 'the one who moves his legs', has caused me to reconsider this.⁵ I now view the

Dena'ina occupation of the north shore of Iliamna Lake and the occupation of Lake Clark as being coordinated movements of some undetermined antiquity. (Townsend (1965:60) notes that Dena'ina occupation of a site excavated in the Pedro Bay area dates from 1700-1750 A.D.)

On Iliamna Lake, the core settlement areas for the Dena'ina have been on the heavily wooded and embayed northern shore, at the mouth of the Newhalen River, at Chekok, and at the head of the lake in the Pile Bay and Iliamna River area. The Newhalen River mouth village referred to in the *Ts'enhgdghulyat* stories is probably the oldest winter occupation area for the Dena'ina on Iliamna Lake. One place that is identified as an important sacred location is a large rock in the waterfall on the lower Newhalen River, the location of which is symbolic of the great salmon runs in this region. Areas on the west shore of lower Cook Inlet between Tuxedni Bay and Cape Douglas were also used seasonally in late winter and spring by the Iliamna people. This same coast line was used in the not too distant past by the northernmost Alaska Peninsula Alutiiq. One place in Iniskin Bay, called *Utcha Tsayeh*, 'Alutiiq Cliff', is known as a war site. One of the most southerly Dena'ina names on Kamishak Bay is *Naq'ezhch'en*, 'On Our Side' (Chenik Mountain), which is as graphic a statement of territoriality as is Captain Cook's "Point Possession" brainstorm of 1778.

The Iliamna and Lake Clark Dena'ina have a commonly known series of war stories in which the basic issue is control of Iliamna Lake. The stories tell of the Dena'ina fighting the *Dutna*, which means 'downriver people'. Only recently have we learned that in Iliamna and Lake Clark the term *Dutna* applies to both the Central Yupik and the Alaska Peninsula Alutiiq. The term *Utchena* or *Utcha* applies to Kokiak or Chugach Alutiiq, but not to Alaska Peninsula Alutiiq. In the series of seven stories the Dena'ina are centered in the villages of Newhalen, at the mouth of the Newhalen River, and Kijik on Lake Clark. At this time

there are no non-Athabaskans living on Iliamna Lake. The people called *Dutna* enter Iliamna Lake and there follow four battles in Dena'ina territory at Seal Island on Iliamna Lake, at Newhalen, at Kijik village, and at Kijik Lake. Finally, there is a fifth battle at a *Dutna* village on the Naknek River which is said to have put an end to the raiding on Iliamna Lake. This cycle of stories, as well as other war stories set in the area indicate that the Dena'ina drove an Eskimo group from Iliamna Lake. Dena'ina remark that they had a strategic advantage in these struggles since they lived within the treeline.

The Lake Clark and Iliamna Dena'ina claim, that until the time of Russian contact in the 1790's, they considered all of Iliamna Lake to be their territory. It is generally recognized that the central Yupiks living around the southern shore of the lake at Igiugiq, Kokhanok, and Newhalen are recent arrivals in the historic period, with close ties to the Nushagak River Yupik. More work on Iliamna ethnogeography is needed as this is a most important contact area between Athabaskan and Eskimo languages. In comparison to the Kuskokwim River, where there is a large zone of dual Eskimo-Athabaskan place names and overlapping territory, it appears that on Iliamna Lake the boundary is quite abrupt. The Iliamna Yupik have borrowed several prominent Dena'ina place names on Iliamna Lake (Newhalen, Chekok, Kokhanok) which indicates the priority of Dena'ina occupation. The Iliamna Dena'ina have some Dena'ina names extending into the modern Yupik areas. The name for Big Mountain on the southern shore near the outlet of Iliamna Lake, *Veq' Ch'ul'egi*, 'The One On Which We Make Medicine' is noteworthy, given the traditions of hostility in this direction. Although the enemies in the Dena'ina war stories are referred to as *Dutna*, there are two places in the Newhalen area that contain the term *Utcha* 'Alutiiq' or 'Aleut'. One of these is the mysterious Roadhouse Mountain, *Utcha Dghil'u* 'Alutiiq Mountain', which is said by the Dena'ina

to be a very dangerous place, where many people have disappeared. These names imply that some (other?) Alutiiq group once lived on the north shore of Iliamna Lake. This must be at a time prior to the series of wars mentioned above since at the onset of this set of stories this was strictly Dena'ina territory. It does appear that the struggle over Iliamna Lake as reflected in Dena'ina ethnohistory gives some support for Hammerich's "Lake Iliamna hypothesis", i.e. that the Dena'ina were driving a wedge between Eskimo-speaking peoples.

It is interesting to speculate how long the Iliamna Dena'ina have been using the coastal area from Chinitna Bay to Kamishak Bay. On this coast there is almost no margin of level land beneath the mountains. Iliamna people state that they went to the coast in the spring when food was scarce elsewhere, and that there were no permanent year-round villages there. (Polly Creek to the north in the Outer Inlet dialect area was the south-most year-round Dena'ina village on the western shore.) We know that in 1796 the Dena'ina were using Kamishak Bay and the Iliamna Bay portage "unceasingly" (Lydia Black, personal communication based upon her translation of the Filip Kashevarov journal). Lake Clark and Iliamna people note that the sea products obtained by the Iliamna Dena'ina were not brought into the Lake Clark or Stony River areas on a regular basis. In these inland areas sea products never had much economic value. There is very little evidence of bilingualism and diffusion between the Iliamna Dena'ina and the Alutiiq formerly of Kamishak Bay and Katmai. In contrast, in the middle and upper Inlet areas there was a network of year-round coastal villages and regular exchange of coastal and inland products. In the southern Kenai Peninsula the Dena'ina and the Alutiiq have influenced one another at least for the past two centuries. Thus, it appears that the Iliamna Dena'ina were the last Dena'ina band to make use of Cook Inlet.

3.3 Clan movements, warfare, and innovation in Upper Cook Inlet

The territory of the Upper Inlet Dena'ina is large, and the dialect that was spoken here was fairly homogeneous. This area includes the Tyonek area on the northern shore of Cook Inlet, the Susitna basin north to the head of the Chulitna River and to Devil Canyon, the western Talkeetna Mountains, Knik Arm and the Matanuska River, and, in historic times, the Point Possession area on the northwestern corner of the Kenai Peninsula. Core settlement areas are the Tyonek area between the Chuitt River and Granite Point, the lower Susitna River between the mouth and the Yentna River, including Alexander Creek and Fish Creek-Red Shirt Lake, the Skwentna and middle Yentna River area, lower Kroto Creek, and upper Knik Arm. In each of these areas there is information on a complex of winter village sites and a high aboriginal population (Fall 1981, Kari and Fall 1987). The names for Mount Susitna and Mount McKinley, *Dghelishla*, 'Little Mountain', and *Dghelay Ka'a* 'Big Mountain', are paired, and these are the paramount sacred mountains in the mythology and history of the Upper Inlet Dena'ina.⁶ An intricate network of trails joined coastal and upland band territories. Only minor lexical differences distinguish the Knik Arm, lower Susitna, and middle Susitna areas which shows that there has been close, on-going association throughout the dialect area.

The degree of dialect divergence between Upper Inlet Dena'ina and the Lower Inlet dialects has led me to posit that the first band to depart from an earlier Dena'ina homeland on the western slopes of the Southern Alaska Range may have entered the Upper Inlet area through the complex of passes in the Rainy Pass area. This may have been 1500 to 2000 years ago. Thus, the series of Dena'ina villages in the Skwentna and upper Yentna areas may be the oldest Dena'ina sites in the dialect area. There are stories of an ancient band of Dena'ina that lived year-round in the

mountains at Rainy Pass called *Shandata Nununk'dnelghuyna* 'The people who cause the migrating birds to fall by hollering'. Probably in rather rapid fashion the Dena'ina occupied the lower and middle Susitna River, the Tyonek area, and Knik Arm. The name for Tyonek, *Tubughnen*, 'Beach Land' is so basic that it implies that this was the first beach on the Inlet that the Dena'ina occupied. (Very few beaches on Cook Inlet are in fact named in Dena'ina place names.)

Between the Dena'ina and the Ahtna, bilingualism and intermarriage were common. There is a zone of bilingual place names and joint land use on their common border in the Talkeetna, Matanuska and upper Susitna areas. There has been widespread cultural and linguistic diffusion between both languages (Kari 1977a, Kari and Fall 1987). It seems safe to conclude that Upper Inlet Dena'ina and Ahtna have been closely associated for some time, perhaps 1500 years. The Ahtna have borrowed the Dena'ina name for the Susitna River, *Sasutna'*, (with the *tn* cluster for 'stream') from Dena'ina *Susitnu*. This implies that Dena'ina occupation of the Susitna preceded that of the Ahtna. A few other place names with *tna'* in modern Ahtna territory on the upper Susitna indicate that Dena'ina territory formerly extended east of the Talkeetna Mountains. In the nineteenth century the Ahtna moved to the north and west into the upper Nenana River and the Talkeetna Mountains.

The Upper Inlet Dena'ina have their own view of the occupation of their territory in their ethnohistorical traditions (which have been extensively recorded by Shem Pete). They have a sense of long-term occupation of the Upper Inlet, but they do not claim to have been in their modern territory forever. Shem Pete has commented that Dena'ina from Knik Arm used to remark that when they first lived on lower Knik Arm the banks in the Point McKenzie-Anchorage area were close enough that a *bashla*, ulu knife, could be tossed back and forth during the fish run. Shem Pete is quite adamant that the Dena'ina did not jointly

occupy any of their modern territory with their archrivals, the Alutiiq. (Upper Inlet has the fewest number of Eskimo-origin loan words, only seven, of any of the Dena'ina dialects.)

The Upper Inlet clan origin stories depict an amalgamation between the Ahtna and the Upper Inlet people. Several of the clans entered the Upper Inlet area from the Copper River via the Matanuska River. Also, southerly movement down the Inlet took place when two girls drifted from Knik Arm on an ice floe to form the *Dusduyghelchina* 'Point Clan' at Kustatan. (Shem Pete once commented that this clan was formed about 1500 years ago.) Shem Pete also recognizes that the clan origin stories do not embrace all the known Dena'ina clans. In particular, he regards the *Nuhzhi* clan, which is supposedly associated with Skilak Lake and which is the dominant clan at Nondalton today, as being ambiguously outside the dual moiety system that he recognizes for Upper Inlet. Shem also is perplexed by the Dena'ina band that lived year-round in Rainy Pass and which does not fit into any of the clan stories. He is also aware that Dena'ina speakers in Lime Village do not seem to be in a strict matrilineal clan system.

In surveying Dena'ina war stories in both the Outer Inlet and Upper Inlet areas, the adversaries are always the *Utchena*, the Alutiiq of Kodiak, Lower Cook Inlet or Prince William Sound. The recurrent pattern in the war stories has the Dena'ina in their own territory being attacked in the summer by flotillas of Alutiiq men in kayaks or umiaks coming usually from the Lower Inlet or, in a few cases, from Prince William Sound. It seems likely that some of the earliest of the Alutiiq-Dena'ina war stories take place far inland from the coast. One battle took place far up the Yentna River at Donkey Creek Lake, where the Alutiiq are said to have gone by umiak and then overland along Mount Yenlo. Perhaps at this time the Alutiiq were setting out from Kustatan or East Foreland for raids in the Upper Inlet.

In the period of Russian colonization (1780-1867) the Upper Inlet Dena'ina seem to have thwarted exploration or direct control of their territory. Early nineteenth century trade through the Upper Inlet to the interior followed traditional networks. It is significant that a Dena'ina speaker reported the northernmost and easternmost village names on the 1839 Wrangell map, *Titlokat* for Toklat and *Nutatlgat* for Batzulnetas on the upper Copper River (Kari and Fall 1987: 34-35).

In the literature on Dena'ina culture traits Wrangell, Petroff, Osgood and others have stressed that certain Dena'ina traits are borrowings from Eskimo peoples, and that their marine adaptation was rudimentary. Dzeniskevich 1981 is a recent restatement of this issue. However, there is evidence that coastal resources of Cook Inlet were well integrated into the Dena'ina economy at the critical times of the year. (See especially Fall, Foster and Stanek 1984.) The Dena'ina fish dock or *tanik'edi*, for dipnetting for salmon in tidewater (which was not documented in Osgood 1937), is an innovation and not a borrowing. Likewise, it seems that the Dena'ina beluga hunting method which involved planting an inverted spruce tree, *yuyqul*, in the mudflats as a spearing platform is not a direct borrowing from Eskimo, but is a rather interesting extension of the basic Athabaskan elevated rack and game lookout. (This method was documented first by Wrangell in the 1830's and has been described in detail in Pete 1980 and in Kari and Fall 1987: 63-65.) Furthermore, both the *tanik'edi* and the *yuyqul* required specialized knowledge of the Cook Inlet tides. The Dena'ina butchering terms and uses for seal and beluga are intricate.

There are good data available now on traditional Dena'ina water transport, vastly more than Osgood (1937:67-69) had access to. Dena'ina used sealskin kayaks extensively in inland areas throughout their territory. Kayaks were known to be durable on overland portages. Kayaks and umiaks complemented but did not replace birchbark canoes, skin boats, and rafts. It appears that the use and manufacture of

kayaks and umiaks by the Dena'ina has considerable antiquity. Although the Dena'ina are said to have been timid in contrast to the Eskimo in handling the kayaks and umiaks, no one can claim that handling boats in Cook Inlet is easy. The elaboration in Dena'ina water transport can be contrasted with that of the Ingalik (Osgood 1940:380), who had access to sealskin from nearby Norton Sound, yet did not use kayaks or umiaks within their territory.

A second alternative to the migration scenario outlined in this paper is that 2000 or more years ago the Dena'ina were located on the upper Susitna River and that the bands gradually moved south into Cook Inlet basin and west across the Southern Alaska Range. This "upper Susitna scenario" should not be overlooked, although I am less attracted to it than to the "western piedmont plateau scenario" that I have suggested here.⁷ Recent archaeological work on the upper Susitna River has yielded 248 sites ranging in age from 10500 B.P. (before present) to the time of historic contact. An Athabaskan tradition is said to be there from 1500 B.P., and it is an open question whether the earlier Late Denali, Northern Archaic, and American Paleoarctic traditions were Athabaskan as well (Dixon, et al. 1985).

3.4 Mountain people on saltwater

The Outer Inlet dialect straddles Cook Inlet from Kustatan (or points north) south to Tuxedni Bay on the western shore to the western bench of Kenai Peninsula on the eastern shore. I have suggested that a Dena'ina band migrated from the western piedmont through Merrill and Telaquana Passes to Kustatan. From here the group crossed the Inlet to East Foreland and then occupied the Swanson and Kenai rivers and the Kenai Mountains, gradually moving south down the Kenai Peninsula to Kachemak Bay. The arrival of the Dena'ina in Kachemak Bay may be as recent as 250 to 300 years ago. The

distinctive features of the Outer Inlet dialect are well attested in the earliest document on the language, in 1804 (Davydov 1977) and 1805 (Rezanov in Radloff and Schiefner 1874), and this demonstrates some period of earlier separation from the Iliamna-Inland and Upper Inlet dialects.⁸

It would be very interesting if Dena'ina presence on the Kustatan peninsula could be dated through archaeological work. My guess is that the Dena'ina have been there for 500 to 700 years. The Dena'ina call this *Qezdeghnen*, 'Point Land'. Kustatan would have been the key location for control of the Inlet. It provides the best high ground for observation up and down the Inlet. It is the most central place for navigation across and up and down the Inlet. Four key passes through the range lead here (Kari and Kari 1982:54-55, 84-88). In fact, there is no place in the oddly shaped Dena'ina language area that is more centrally located. In the sequence of migrations suggested here, a Dena'ina migration from west of the range to the Kustatan area in say 1000 AD looks very much like a move coordinated with the contests over Iliamna Lake and Lower Cook Inlet. Both southerly fronts would have been reinforced by a new group in the Kustatan area. It is also of interest that one of the Cook Inlet clans, the *Dusduyghelchina*, the 'Point Clan', was founded at Kustatan when two girls drifted down the Inlet on an ice floe. The *Tulchina* 'Water Clan' is said to be indigenous to Outer Inlet and is associated with the sea otter.

The core occupation areas in the Outer Inlet dialect area are Kustatan and the central Kenai Peninsula between Swanson River and the Kasilof River. The beach bluff in this area was well populated according to the last Kenai Peninsula Dena'ina speakers. The key upland areas were at Skilak, Kenai, and Tustumena lakes. The regional name for the Kenai Peninsula, *Yaghenen*, 'Good Land', is derived from the name for the Swanson River, *Yaghetnu*. Also the Kenai Peninsula Dena'ina people are called *Yaghedna*, 'Good (Land) People'. These names imply that the Swanson River area was an early central base for the Kenai

Peninsula Dena'ina. Also of interest is the name for a low ridge at East Foreland, *Tulchina Yits'a*, 'Water Clan Ridge'.

Both Osgood and de Laguna recorded some association between the last Seldovia Dena'ina and Tustumena Lake. It is logical to assume that the first locations on Kachemak Bay used by the Dena'ina would have been spring camps such as Seal Beach on Chugachik Island at the head of bay which was used by the Dena'ina in the nineteenth century for shellfish and sea mammal hunting (Workman and Lobdell 1981). This area would have allowed for an inland-coastal migration cycle from Tustumena Lake to Kachemak Bay similar to that carried out by the Iliamna Dena'ina. Such a phase would have preceded a year-round coastal adaptation such as Osgood documented for the Seldovia Dena'ina.

Since the Dena'ina are the only Northern Athabaskans on the Pacific, the vocabulary in the language that is associated specifically with marine and coastal ecology is especially appropriate for examination in the manner suggested by Sapir (1949:444-449). This is a problem in 'areal linguistics' and local biogeography. It is interesting to note whether Dena'ina has basic roots for marine terms, whether it has innovated new Athabaskan terms and done so uniformly throughout the dialects, or whether marine terms have been borrowed from or loaned into neighboring languages. (A model for such a study is Newman 1973, an areal study of the marine vocabulary in Bella Coola.) There is no space here to present the data in detail. To summarize from a list of 60 marine biota terms found in Dena'ina, we find that the Dena'ina marine lexicon is much less detailed than in the neighboring Alutiiq language of the southern Kenai Peninsula. In general, Dena'ina marine biota terms have the look of having been added to the language piecemeal and relatively recently. There are only one or two Dena'ina marine terms which are attested in several other Athabaskan languages. (The term for 'whale' is the most widely attested.) Virtually no marine terms, not even a term for 'ocean', can be reconstructed for proto-Athabaskan.

Many of the items on the list are limited to one of the dialects. Over a dozen terms are restricted to the extinct Seldovia dialect (as recorded in Osgood's 1937 vocabulary or as recalled by Peter Kalifornsky of Kenai), e.g. *shangideq* 'murre' which was borrowed from Alutiiq *sak'itaq*. Other terms are pan-Dena'ina such as *tuq'es*, *tuq'is*, 'sea otter', a Dena'ina innovation found in no other Athabaskan language. The term for 'seal' *qutsaghi'tiy*, literally 'that which holds its head up', is found in Ahtna and Kuskokwim Ingalik, which suggests some Dena'ina trade in seal products in these areas. Some biota have completely different terms in the dialects, which show that they entered the language in three or four different areas and at different points in time. One such example is 'sea lion', where in Outer Inlet and Iliamna two terms, *taza* (Athabaskan?) and *ada'tut* (Alutiiq) are used, but in Upper Inlet an innovated Dena'ina term, *ta'ilk'eghi* 'the one which enters the water angrily', is used. The three terms for 'beluga whale' *quyushi* (Inland and Iliamna), *quyeshi* (Upper), and *qunshi* (Outer) are difficult to derive from a single basic form.

In the coastal place names used by the Dena'ina, we see that the basic riverine generic and directional system is maintained. Cook Inlet itself is treated as a river with a river mouth. Beaches and mudflats are named in relation to nearby streams. The Dena'ina terms for river or river mouth are applied to the major bays in the Kachemak and Tuxedni-Chinitna-Iliamna Bay areas. See Kari and Kari 1982. Clearly the Dena'ina and the proto-Athabaskans (like the proto-Indo-Europeans) were not ancient maritime cultures (cf. Dyen and Aberle 1973:382).

There are several sites in Outer Inlet of battles between the Dena'ina and the Alutiiq. Wrangell, Petroff, and Osgood reported that the name for the Alutiiq, *ut'cha* or *ut'chena* was also used in Outer Inlet to mean 'slave'. After the Russians relocated the Alutiiq from Prince William Sound at Port Graham and English Bay, the Seldovia area became a

multilingual community, and Seldovia Dena'ina and their Alutiiq neighbors began to participate in a common culture. The Outer Inlet Dena'ina and Kenai Peninsula Alutiiq share a large number of Russian loan words. The Dena'ina borrowed several Alutiiq terms for marine mammals, fish, and shellfish local to the southern end of Cook Inlet, and the Alutiiq borrowed some Dena'ina terms for biota in Upper Inlet, such as 'king salmon', 'smelt', 'birch fungus', and 'mountain ash'.⁹ One Seldovia Dena'ina phonological trait is also due to Alutiiq areal influence; the bilabial stop went to *w*; this is *b* in Kenai and in Upper Inlet and *v* in Inland-Iliamna.

From the place names data for both the Dena'ina and the Alutiiq in the southern Kenai Peninsula it appears that the Dena'ina occupation of Kachemak Bay preceded that of the neighboring Alutiiq. Many of the Alutiiq names on Kachemak Bay are obviously post-contact in origin, and they borrowed seven or eight names directly from Dena'ina. Also, there are several Dena'ina origin place names embedded in the detailed Alutiiq place names list for Port Graham-English Bay (Leer 1981). Especially intriguing is the name for Mount Bede, the last major navigational point on the eastern shore of Cook Inlet, *Cayiill* in Alutiiq, (possibly *Tsayiɬ* in Dena'ina) which both Leer and I feel is Dena'ina in origin. The place names data reinforce the picture from the archaeological record, that Kachemak Bay was depopulated for 1000 or more years until the Dena'ina arrived in ca. 1700 AD. One Dena'ina place name on the central Kenai Peninsula that seems to have a non-Athabaskan root is the name for the Kasilof River, *Ggasilatnu*.

4. Conclusion

The ancient Dena'ina were a mountain people. The area west of the Alaska Range in the Inland dialect area is probably the oldest Dena'ina homeland. Some bands of Dena'ina may have been participating in coastal activities on Cook Inlet for as long as fifteen hundred years. In the middle and upper Cook Inlet the Dena'ina developed well-established routes for sharing in the labor and the products of both upland and coastal areas. By maintaining control of the key passes and transportation corridors in the Alaska Range and an aggressive posture, Dena'ina bands gradually annexed areas east and south -- Lake Clark and Iliamna Lake and Cook Inlet basin -- some of the finest resource areas in Alaska. It seems that the Dena'ina recognized these important geopolitical issues a long time ago.

Notes

- * I would like to thank Priscilla Russell Kari, Jeff Leer, Lydia Black, Craig Mishler, James A. Fall, Frederica de Laguna, James VanStone, and Michael Krauss for the comments on an earlier draft of this paper.
- 1. It seems that the dramatic contrast in material remains between Athabaskans and Eskimos has become a kind of self-fulfilling prophecy for northern archaeologists. Eskimo areas continue to receive vastly more interest and funding than Athabaskan areas. At the 1985 Alaska Anthropological Association's symposium "Current Views on Late Prehistoric Cultures in Alaska" only two of the nineteen papers dealt with Athabaskan problems.
- 2. However, this is a deceptive issue, because, as Krauss has often observed, it is sometimes arbitrary to draw language boundaries between some contiguous

Athabaskans bands. For example, there are no major geographical barriers on the Tanana River and the bands there have received several linguistic bracketings. Tanana, Tanacross, and Upper Tanana are now treated as languages (by the linguists at least!). Were they considered to be dialects, the differentiation would be more marked than among the dialects of Dena'ina.

3. It is interesting that Dumond identified the clay pottery found at Knik as an Eskimo trait (Dumond and Mace 1964). However, de Laguna (1947:245-49) felt that the clay pottery on the upper levels in Kachemak Bay was of Dena'ina manufacture and that the Dena'ina had either learned the art or traded for the items from the Kuskokwim Athabaskans. Although Osgood (1937:77) found no information about pottery in the early 1930's, there is good information about this from Dena'ina in Lime Village who had a pottery tradition similar to what Osgood (1940: 146-7) described for the Yukon Ingalik. It appears that proto-Athabaskan had a term for 'clay pot', *'usa:k'. This word means 'clay pot' in Lime Dena'ina, Ingalik, and Sarcee in Alberta. The word also appears in Navajo as 'pot'. It is also possible that the terms for 'grass basket' in Central Yupik *issran* and in Aleut, *as̄atīx̄*, may be ancient diffusions from Athabaskan with meaning changes. Also note that the Dena'ina borrowed *hagi*, 'grass basket', from Alutiiq *raagik*.
4. The Yukon and Kuskokwim dialects of Ingalik are very close to one another; this distance is comparable to the distance between the Inland and Iliamna dialects of Dena'ina. It is relevant that whereas the Yukon Ingalik are "Eskimo-like" in their elaborate ceremonial life, the middle Kuskokwim Yupik in the Sleetmute area are "Athabaskan-like" in their adoption of Athabaskan material culture and in their abandonment of the core

Central Yupik ceremonial cycle. Extending this comparison further, it is also relevant that there is in the twentieth century very little bilingualism between Yupiks and Ingaliks on the Yukon but extensive bilingualism among them on the Kuskokwim.

5. Five of the seven stories in the *Ts'enhhdghulyat* cycle were published in Tenenbaum 1976b and reprinted in Tenenbaum 1984:232-260. However, these stories were told and then published out of sequence. Key transitions and two other stories heretofore untold have recently been recorded and translated by Andrew Balluta of Nondalton.
6. The geologist A.H. Brooks got several facts confused about the Dena'ina and Alaskan Athabaskans. For example, he said that the Susitna Indians never approached Mount McKinley, that the Tyonek Indians did not know the country beyond 20 miles of Tyonek, and that the Alaska Range formed a nearly impassable barrier to the natives. In his campaign to ensure the future of the name Mount McKinley (rather than Denali, the Koyukon-origin name), Brooks made this often-quoted statement, "The Alaskan Indian has no fixed geographic nomenclature for the larger geographic features" (Brooks 1911:22).
7. The sequence of movements from an upper Susitna homeland would have a group moving west of the Alaska Range through Rainy Pass to the *Htsaynenq'* plateau prior to the time Upper Inlet Dena'ina lost *z* and *zh*, and developed the Ahtnaized consonant mergers. Such a scenario might place the Dena'ina in the core areas on the lower Susitna, at Kroto Creek for example, even earlier than I have suggested in this paper. It seems that Dena'ina had some period of relative isolation from other Alaskan Athabaskan languages.

The Stony-Mulchatna area would have been more isolated from the other Athabaskan languages of central Alaska than the upper Susitna would have been. Furthermore, the shared Dena'ina-Ingalik vowel shift suggests that the Dena'ina were west of the Alaska Range prior to being neighbors with the Ahtna.

8. I have long been puzzled as to why the Kenai Dena'ina name for the month of March is *tuq'aka ni'u*, 'king salmon month'. Presently the king salmon arrive in the Kenai area in May. Whatever relevance this may have to Dena'ina arrival here is unclear.
9. In many cases, recent Eskimo borrowings can be distinguished from older ones. Some Eskimo-origin loanwords in Dena'ina are quite ancient, e.g. *naneq* 'stone lamp', and *dahmak* 'skin dress', which are in all the Dena'ina dialects.

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Directional Systems in Athapaskan and Na-Dene

Jeff Leer

The primary goal of this paper is to describe the salient characteristics of the directional systems of Tlingit, Eyak and Athabaskan, the three branches of the Na-Dene phylum. The directionals constitute a small but important lexical category in these languages. After describing the directional systems in each branch, I attempt to identify cognates, and speculate briefly on what the early Na-Dene directional system may have been. Finally, I show that the relationship between certain sibling terms and directional stems that Krauss demonstrates for Eyak has a striking parallel in Tlingit.

1. Directional Systems

Athabaskan, Eyak and Tlingit each have a small but important set of directional stems. Each of these stems may have one or more lexical derivatives, which we refer to collectively as directionals.¹ In each Na-Dene language or family, directional stems are distinguishable as a lexical category on both semantic and distributional grounds. Directionals are formed from directional stems by means of a limited set of suffixes and postpositions, and a characteristic and unique set of derivational affixes, and in Athabaskan also with a special set of demonstrative prefixes.

It is important to note that the term 'directional' is a lexical category label, not a syntactic one. It is thus on a par with terms like 'interrogative', 'demonstrative', 'pronominal', etc., which characteristically refer to a group of words which form

a natural lexical group but whose various lexical forms and derivatives may crosscut the syntactic categories, or even other lexical categories. For example, the grouping of 'I', 'me', 'my' and 'mine' together as "pronouns" in English represents a lexical classification, not a syntactic one. Where the various forms or derivatives of such lexical categories belong to different parts of speech, we may use the lexical category label as a modifier for the part-of-speech label; e.g. 'what' is an interrogative pronoun and 'where' is an interrogative adverb. Likewise, in the present paper I will refer to a directional which is a noun as a 'directional noun', and so forth.

Semantically, directionals are words that specify direction with respect to a frame of reference. This frame of reference may be the natural environment, and in particular, a waterway such as a river system or the ocean. It may also be a containment such as a house or boat. Finally, direction may be specified with respect to the orientation of a person or group of persons.²

Directional terms typically occur in pairs denoting opposite directions, like "up" and "down". However, a given term may be opposed to more than one other term. For instance, Athabaskan *ni? 'behind; upstream' is in semantic opposition with both *nəsə 'ahead' and *da? 'downstream'. Furthermore, the directional for 'across (the water)' is its own opposite and so does not pair.

The most important frame of reference for most of these languages is the waterway, that is, the drainage system of rivers, lakes and sloughs, and for Eyak and Tlingit also the ocean, inlets and passages. The oppositions found here include the following: *upstream* vs. *downstream*, *upland* (up from bank/shore) vs. *downland* (toward bank/shore), *out into open water* (from shore) vs. *ashore* (from open water), *across* (on the other bank or shore).

The opposition *up* vs. *down* (vertically) may be distinct from the above, but there is a tendency for *up* to equate with *upland* and *down* with *inside* or *aboard*. the opposition *inside* (into house or home) vs. *outside* is found in Tlingit but is not

integral to the directional system elsewhere. In Athabaskan and partially in Eyak, the opposition *toward rear of house* vs. *toward front of house* is identical with the *upland:downland* pair, for the simple reason that houses were traditionally constructed with the door facing the waterway.

There is also an opposition *out into open area* vs. *back away from open area* in Tlingit; here the open area may be a clearing or the center of a house or of a fire (see further 4.3).

An opposition *ahead* (toward the front) vs. *behind* (toward the rear) is found in Athabaskan and Eyak, but not Tlingit. In both Athabaskan and Eyak *ahead* is also the term for *out into open water*.

An unpaired directional *aside* (off to the side, away) is also found in Athabaskan.

The schematic diagrams in Chart 1 illustrate the semantic relationships among the waterway-oriented directionals in Tlingit, Eyak, and Athabaskan. After discussing the directional systems of individual languages in sections 2-4, we will compare the directional stems and attempt to identify cognate sets for Na-Dene in section 5.

2. Tlingit directionals³

The Tlingit directional system is given in Chart 2. The most basic forms of Tlingit directionals (first column) form a special subcategory of nouns. Like other nouns, these can occur as arguments of verbs and objects of postpositions, and they can be modified by demonstratives. They cannot, however, be otherwise modified or possessed. The prefix *di-* (also *da-* for some speakers) is optional with *kí* and *ʔí* and their variants, but obligatory with *-ʔá*. Three of these directional nouns, *dè-kí*, *nà-kí* and *?ixkí*, are fossilized compounds of the directional stem plus head noun *kí* (perhaps cognate with *kí* 'above'). The phonological alternations seen in *dè--dág-* 'out

to sea' and *nà·nàn·* 'upriver; north' are unparalleled elsewhere.

Three Tlingit directionals also have corresponding possessed nouns formed by means of the suffix *-yá(g)*. Epenthetic *-a-* precedes this suffix after an obstruent, i.e. in *?i·cayá(g)* 'down toward the beach from' and *?i·xayá(g)* 'downriver from', but the *y* of the suffix drops in *kiná(g)* ?< *kin-yá(g)* 'above'. elsewhere, however, possessed nouns corresponding semantically to directionals are either heterogeneous (e.g. *ta-yì* 'below') or absent. Examples of NPs formed with these possessed nouns are

- (1) *híd kiná(g)* '(place) above the house'
house above
- (2) *híd tayì* '(place) below the house'
house below
- (3) *?àn ?i·cayá(g)* '(place) on the beach below the town'
town beachside.

2.1. Directional nouns

All postpositions denoting spatial relationships can occur with directional nouns as objects. These postpositions are

- x'~i 'located at'
- d 'arriving at, in position at'
- x̣ 'in motion at, repeatedly arriving at'
- de~dé (also -dè~dé) 'toward'
- dax̣ 'from'

-náx 'by way of, along'.

-gà~-gá 'distributed in the area of'.

Special directional stem variants occur with the postposition -de 'toward N, N-ward'; the resulting adverbs are listed in the second column of Chart 2. Examples of directionals with postpositions are

(4) (di)kí-x' yê yatì 'it is up above'
-located.at thus it.is

(5) (di)kí-d dé-n '(a lake) lies up above'
above-in.position.at water.lies

(6) (di)kí-dáx yà wù-gù-d 'he walked down from above'
above-from down he.walked

(7) kín-de wudíqí-n '(it flew) upward'⁴
above-towards it.flew

The stem variants found with -de also occur in the adverbial construction N₁-da-N₂-(i)n 'N₂ N₁-ward', where N₂ is an anatomic noun and N₁ a directional stem. The morpheme -da- here is an allomorph of the postposition -de 'toward'.⁵

(8) kindaśá-n 'head up' [kín-de 'upward'; śá 'head']

(9) quṣdak'ú-ṭ'in 'stern backward' quṣde 'backward'; k'ú-ṭ' 'stern'.

The otherwise unattested noun stem čú also occurs as N₂ in this construction: N₁-dačú-n 'straight N₁-ward':

(10) ?igdačú-n 'straight down to the beach'

(11) ʔà·dačú·n ‘straight (ahead); directly, plainly, truthfully’

Nouns denoting a place or area in the direction indicated by the directional are formed by adding the suffix -naṣʔá to the directional noun (Chart 2, first column). This suffix is a compound of the postposition -náṣ ‘by way of, along’ plus the pronoun ʔá ‘that (previously referred to)’. These nouns roughly translate ‘the N side’:

(12) ʔí·xnaṣʔá, ʔixkí·naṣʔá ‘the downstream or south side; place or area to the downstream or south side’.

This suffix is also added to demonstratives and the stems for ‘right’ and ‘left’:

(13) yá·naṣʔá ‘this side’

(14) ši·ynaṣʔá ‘right side’

(15) s’át’naṣʔá ‘left side’

Nouns denoting a specific section or part of an area are formed by compounding with -nà, which may be either a reduced form of the possessed noun niyà ‘direction’ or cognate with the unpossessed noun nà ‘moiety, tribe’ (originally perhaps ‘side’). These forms are given in the third column of Chart 2 above. Note especially the following terms for parts of a house:

(16) (di)kì·nà ‘upstairs’ [cf. (di)kí·naṣʔá ‘place or area up above’]

(17) (di)ɣà·nà 'downstairs'

(18) daɣinà 'inner room'

(19) daɣinà, diɣinà 'outer room'.

Compare also hà·nà·náxʔá 'this way' (hà 'here', -náxʔá as above). The suffix -nyà, which would appear to be a variant of -nà, occurs in nà·nyà, hè·nyà, and sà·nyà. The latter form preserves a fossilized directional stem sà~sá- found only in

(20) sà·nyà qʷá·n 'Southern Tlingits (from Ketchikan and further south)'

(21) sá·náx (wuduwanúḡʷ) '(the wind is blowing) from the south' [with postposition -náx 'by way of, along']

Compare also

(22) hè·nyà qʷá·n 'Craig-Klawock Tlingits' from the demonstrative hé(·) 'over here (to the side)';

(23) nà·nyà qʷá·n 'Northern Tlingits' [cf. nà·kí 'upstream; north'].

The directionals ɣán, nè·ɬ, gá·n, and qúx- seem of recent origin. They do not occur with -nà, and the preverbs ɣan, nè·ɬ, qux have suppletive forms with the postpositions -x and -de which are not found with preverbs corresponding to other directionals (see the following paragraph for details). Furthermore, nè·ɬ 'home', unlike the other directionals, can occur possessed:

- (24) ʔaɣ nè-t-í 'my home'.
my home-POSS

Note also the compounds *dag-ká* 'interior' and *ʔan-ká* 'shore' (both with head noun *ká* 'surface'). These are synonymous with *dá:g* and *ʔán*, respectively, in coastal Tlingit.

2.2. Directional preverbs⁶

Most directionals also occur as preverbs specifying direction of motion. As preverbs they sometimes have special meanings as well: *ʔan* 'ashore' and 'to completion, finishing', *ʔè* 'down' and 'aboard', *dà:g* 'out to sea; out into open' and 'falling down', etc. Most of the directional preverbs can occur with the progressive and customary superaspects, and if there is no superaspect, they require that the following verb take Ø-aspect forms. An exception is *ʔà* 'down', which requires *ga*-aspect. The homophonous preverb *ʔà* 'along' occurs only with the progressive superaspect, where it is the default preverb.⁷

Unlike the other preverbs, *ʔan*, *nè-t*, *quɣ^w*, and *kux* do not occur as such with Ø-aspect motion verbs in the future tense and progressive superaspect; instead, the directional with *-de* (second column on Chart 2) is used. Since the directional with *-de* constitutes a separate phrase and not a preverb, the verb is preceded by the default progressive preverb *ʔà*. Similarly, in the customary superaspect, these preverbs are replaced by forms with the postposition *-ɣ* (these forms are *ʔaɣ*, *nè-tɣ*, *quɣ^w*, and *kuxɣ*, followed by the form of the customary that is used with ordinary NPs with the postposition *-ɣ*. The type of suppletion found with these three preverbs closely parallels that seen in constructions where a NP with the postposition *-d* 'arriving at' is followed by a verb in the Ø-aspect; here also

the postposition -d is replaced by -de when the following verb is in the future tense or progressive superaspect, and by -x when the following verb is in the customary superaspect.

The other directional preverbs occur as such regardless of the tense or aspect of the following verb. Compare the following forms with the motion verb Ø-qux^w 'go by boat':

(25) dà·g ʔuwaqúx^w 'he went out to sea' Ø-aspect perfective

(26) dà·g qúx^w 'go out to sea!' Ø-aspect imperative

(27) dà·g naqúx^w 'he's going out to sea'

(28) dà·g qúx^wz 'he keeps going out to sea'

(29) ʔan ʔuwaqúx^w 'he went ashore'

(30) ʔan qúx^w 'go ashore!'

(31) ʔánde ʔà· naqúx^w 'he's going ashore'

(32) ʔax qù·x^w 'he keeps going ashore'

(33) Juneau-d ʔuwaqúx^w 'he came to (arrived at) Juneau'

(34) Juneau-d qúx^w 'come to Juneau!'

(35) Juneau-dé ʔà· naqúx^w 'he's coming/going to Juneau'

(36) Juneau-x qù·x^w 'he keeps coming to Juneau'

Compare further the suppletion seen with *yà* ‘down’ the only one of these preverbs that takes *ga*-aspect forms; this preverb is replaced by *yé* in the future, progressive and customary forms. The verb theme Ø-gud ‘go by foot (of single human)’ is used to illustrate:

(37) *yà* wù-gù-d ‘he walked down’ [non-Ø-aspect perfective]

(38) *yà* gagú ‘walk down!’ *ga*- aspect imperfective; irregular imperative stem -gú

(39) *yè* nagúd ‘he’s walking down’

(40) *yè* gúdž ‘he keeps walking down’

2.3. The preverbs *dà:g* and *dà:g*

As seen in Chart 1, the directionals *dè-kí* ‘out toward open sea’ and *dá:g* ‘back/up into woods, the interior’ pair with *yán* ‘ashore’ and *?í:g* ‘down to beach/bank/shore’, respectively. The directionals *yán* and *?í:g* are experientially bounded (to use Enrico’s terminology; see below), the boundary being where water meets land. The directionals *dè-kí* and *dá:g*, on the other hand, are unbounded in their primary use referring to land and sea. since they refer to opposite directions, it is not surprising that they pair with each other as well as with *yán* and *?í:g*. The semantic pairing of these directionals is best seen in their preverbal forms

dà:g ‘out toward open sea;
out into open area;
toward center of main living area;

into or onto fire, stove, burner' and
 dà:g 'back/up into woods, the interior;
 back away from open area;
 back from center of main living area;
 out of or off fire, stove, burner'.

The directional nouns themselves have not been attested with this range of meanings; they refer rather to land/sea orientation. In general, directional nouns are semantically more restricted than the preverbs.

What is especially interesting here is the apparent classification of both sea and fire as "open areas." Enrico (1985) demonstrates this same fact for the Haida directional nouns (called "relational nouns") q'ad 'in a clear space', diid 'at the edge of a clear space', and the corresponding directional suffixes -gał and -sa. He says (pp. 401-402):

"Clear space" can be either experientially bounded (a room, a muskeg) or unbounded (the sea). A symmetrical, bounded clear space, which we can schematize as a circle, has a center, the focal point for the suffix -sa and the starting point for the suffix -gał.

For the Haida house, with its square or nearly square interior space, this focal point was the fire. The fire was conceived as the main medium of transfer and communication between the world of everyday life and the spirit world. Offerings to tsa.an ɣaàdee, the Ocean People (spirits), were put into the fire or into the sea, while food, drink, and tobacco for the dead were put into the fire...This conception of the fire as continuing beyond the focal point of the house interior into another world brings into approximation the two chief members of the set of clear spaces, the

house interior and the sea, the bounded and unbounded.

An example of the pairing of these directional preverbs is

(41) dà·g ʔà·watán wé q'wàλ 'she took the pot out (of storage or a place at the periphery of a house); she put the pot on/in the fire, on the burner'

(42) dà·c ʔà·watán wé q'wáλ 'she put the pot away; she moved the pot off/out of the fire, off the burner'

Note also daginà· or diginà· 'inner room' and dacinà· 'outer room', mentioned above.

In Interior Tlingit these directional preverbs are further used for 'downstream' and 'upstream':

(43) dà·g ʔuwaqúx^w 'she went downstream (by boat)'

(44) dà·c ʔuwaqúx^w 'she went upstream'

I have not found this usage in Coastal Tlingit, but it may be possible here also.

The directional nouns nà·kí· 'upstream, north' and ʔixkí· 'downstream, south' have no corresponding preverbal forms, and in modern speech are mainly used like English "north" and "south" (e.g. Seattle is "south" from the viewpoint of Juneau). In Interior Tlingit, these terms are not now used for 'upstream' and 'downstream' unless 'upstream' is north and 'downstream' is south. In the interior, riverine orientation is much more important than on the coast, and it is entirely natural that the unbounded directionals referring to orientation with respect to the open sea be extended inland along the waterway. Note that at some point this involves a general shift in absolute direction. The Taku River, which was the original

home of the Interior Tlingit, flows into the Pacific; but they have since moved onto lakes which feed the Yukon River.

The directional preverb *kux* 'aground, into shallow water' was discovered just before this paper went to press. It appears to be restricted to Interior Tlingit, and is perhaps the most recent of the directionals, based on *ku:x* 'dry (ground)'. The semantic domain of this directional is as yet unclear; it appears to overlap with *yan* 'ashore'.

3. Eyak directionals

Chart 3, based on data from Krauss (1970), does not give a complete listing of what could be considered directionals in Eyak.⁸ These directionals are included primarily because they are cognates of what can be shown to be directionals in Athabaskan. They all occur both as postpositions and preverbs. Note, however, that one of the directionals has two postpositional forms: *-lahz* 'in front of, out to sea from, south of' and *-Y·zi?* 'toward the bow relative to'.

3.1. Directional postpositions

The directional postpositions consist of either the bare directional stem or the stem plus a final postpositional suffix.⁹ the postpositional suffixes occurring with directional postpositions are

- d 'at rest', also a nominalizing suffix
- dəx̣ (~-x̣ / V? __) 'motion within area'
- č̣ ('-əč̣' / ɕ __) '(continuous or repeated) motion toward'
- da? 'arrival at'.

The compound suffix -u·d, apparently equivalent to -d 'at rest', occurs in the forms -dəcu·d and -yəxu·d (see 48, 50).¹⁰

These directional postpositions take nominal and pronominal objects, and in addition, the areal prefix xə-, which forms a noun referring to the whole area, and the prefix ɢəl-, which forms a noun referring to an object or part of an object farthest in the indicated direction. In the Eyak dictionary, noun phrases formed from directional postpositions are usually attested with final postpositional suffixes (except in lexicalized compounds). The forms found with the stem -dəɢ 'above' are

(45) -dəɢ-d '(at rest) above'

(46) -dəɢ-dəx '(in motion) above'

(47) -dəɢ-əč 'toward above'

(48) xə-dəɢ-d, xədəɢ-u·d '(at rest) above'

(49) xə-dəɢ-dəx '(in motion) above'

(50) ɢəl-dəɢ-d, ɢəl-dəɢ-u·d 'in the highest position'

3.2. Directional preverbs

The directional preverbs are more idiosyncratic, and as in Tlingit, sometimes have special uses. Some occur only unsuffixed; others (such as ʔədiɣ 'home' occur only with the postpositional combination -eʔ-x 'motion within area' (equivalent with -dəx above); others have both forms, e.g. (51) dəɢ sahɬijh, dəɢeʔx sahɬijh 'he went upriver', where there

is no apparent difference in meaning. Furthermore, postpositions and preverbs are not always semantically equivalent. For example, compare compare the preverbs $yə\chi$ 'down' and $yə\chi e?\chi$ 'indeterminate direction, perhaps northwest', which are semantically quite distinct, with the morphologically parallel pair $də\epsilon$ and $də\epsilon e?\chi$, both 'upstream'. Furthermore, the postposition used for 'upstream' is $-lə\epsilon$, but the preverb used is $də\epsilon$ (cf. the Interior Tlingit use of the preverb $da:\epsilon$ 'back/up into woods' for 'upstream'). Both $-lə\epsilon$ and $-də\epsilon$ are glossed 'upland' in the *Eyak Dictionary*.

3.3. The directional $(-)\text{li}?$

Particularly interesting is the usage of $(-)\text{li}?$ 'behind, back, downstream', cognate with Athabaskan $*-ni?$ 'behind, back, upstream' and apparently also the stem $nà-$ of Tlingit $nà-kí$ 'upstream'. The basic meaning of $(-)\text{li}?$ is given as 'deeply back into cavity, from front end to back of cavity; behind, to the rear'. It is thus puzzling that this means also specifically 'downstream', and not, more logically, 'upstream', as in Athabaskan.

Krauss offers an attractive hypothesis on p. 454 of the *Eyak Dictionary* to account for this discrepancy. He speculates that this usage "was developed very anciently while the ancestors of the Eyak were still in the interior of Alaska, e.g. in the Middle Copper River area, downriver [sic] from where the Chugach Range and canyon at Giles Glacier on the Copper River represented formidable obstacles and thus the back of a territory oriented in the opposite direction..." (Krauss obviously meant to say "upriver" instead of "downriver" here.) This hypothesis is strengthened by the fact that the Ahtna name for the Eyaks is $dancene$ 'those (nearby) upland'.

This term does not describe their location with respect to the Ahtna in the historic period; they should have been called "downstream people" if they were on the coast at the time they were named by the Ahtna. Perhaps the Eyak were given this name at a time before they moved down to the coast.

4. Athabaskan directionals

Athabaskan directionals, in contrast with those of Eyak, are a closed set of morphemes with clearly defined lexical characteristics that effectively set them apart from other nouns and postpositions. The items reconstructed here account for all demonstratives in the languages surveyed here. Rice (1983), however, lists additional directionals for Slave which do not appear to fit into the system given here; more comparative work should be done with these in the neighboring languages.

Athabaskan directional stems can historically be regarded as unpossessed nouns to which postpositions or adverbializing suffixes are added to form adverbs. The Pre-PA roots and PA reconstructions for two types of adverbs, the allative (signifying motion in a given direction) and punctual locative (signifying location at a point in a given direction) are given in Chart 4.

Two of the stems present problems in reconstruction. For Pre-PA *nəsd > PA *nəs- 'ahead', Carrier nəs and Kutchin nda regularly reflect initial *n, but Ingalik ɲəθə reflects initial *ɲ.¹¹ Furthermore, the vowel of (Pre-)PA *ni?, cognate with Eyak li?, is problematic; reflexes of *e and *u are also found. Carrier in particular has two separate directionals, -nu? 'upstream' and -ni? 'behind', whereas in the rest of Athabaskan there is only one directional stem having both meanings. One could argue that Carrier preserves a distinction lost elsewhere, but the evidence is inconclusive. The only

other form supporting PA *nuʔ found so far is Koyukon nuʔə alternating with naʔə 'upstream; behind (allative)'.¹²

4.1. Directional adverbs

Directional adverbs have three components: a prefix (see section 4.2), the demonstrative stem, and a suffix. Historically, and sometimes synchronically, the suffixes added to the demonstrative stem are postpositions. By PA times, however, some of these postpositions had become syntactically opaque or been lost due to phonological processes. This erosion of the original system has continued in many of the daughter languages. It is thus often more appropriate to view the original combination of stem plus postposition as a stem plus unclassified suffix or as an unanalyzable stem.

The **allative**, which signifies motion in a given direction (Chart 4, second column), is formed with a suffix which has the form -ə after a consonant and zero after glottal stop (*ʔ predictably voices to *ɣ intervocalically in PA *yəɣə 'downward, toward below'. In the Interior Alaskan group of Athabaskan languages (Holikachuk, Koyukon, Upper Kuskokwim, Tanana, Tanacross, Upper Tanana and Ahtna), the suffix -ə is analogically added to stems ending in glottal stop as well. This suffix also forms adverbs of time from time nouns in some languages (cf. Ahtna se:n < *še:n 'summer', se:n-e < *še:n-ə 'in summer') and appears to be historically identical to the incorporated postposition *-(h)ə#. It may be cognate with the Tlingit postposition -i, allomorph of -x' 'located at'.

The **punctual locative**, which signifies location at a specific point (Chart 4, third column) is formed with the suffix *-d, cognate with Eyak -d 'at rest' and Tlingit -d 'arriving at, in position at', both postpositions. This suffix triggers

spirantization of preceding stops and is lost as the second member of an obstruent cluster in PA: *dæg-d > *dæɣd > *dæɣ 'located at a point above'¹³. Suffixed to stems ending in glottal stop, it triggers the supersegmentalization rules (constriction and nasalization): *ŋa-nʔ-d > *ŋạ̰̤-d 'located at a point across'.

The **areal locative**, which signifies location in the area in a given direction, is formed with a suffix perhaps to be reconstructed as *-ɣʷ or *-ɣʷə (< *-ɣʷ-ə?), apparently the cognate of Eyak (-eʔ)-ɣ, (a variant of -dæɣ) 'motion within area' and Tlingit -ɣ 'in motion at, repeatedly arriving at' (see note 13). The reconstruction of this suffix is problematic, partly because it is largely restricted to the Alaskan Athabaskan languages. In the Interior Alaskan group, the suffix reflects *-ɣʷə; in Tanaina, perhaps *-ɣʷ(ə); in Han and Kutchin, perhaps *-ɣʷ(ə). In all these languages, full vowels which immediately precede the suffix are labialized to *u. This would seem to be a regional post-PA development, since labialization of uvulars posited for Pre-PA is lost in PA without affecting a contiguous full vowel. Outside the Alaskan Athabaskan languages, the only areal form found so far is Carrier (Morice) -ʔahʷ 'away, off, yonder (round about)', which apparently reflects *ʔạ̰̤ɣʷ(ə) 'location in the area off to the side'.

The **ablative**, which signifies motion or origin from a given direction, is formed by adding the postposition *-č'ən 'from' to the stem, which undergoes the same phonological processes in PA as when *-d is added. Koyukon surprisingly shows -c'ə(nʔ) 'towards' instead of -c'ən 'from' for the ablative, whereas Hupa uses -č'ənʔ 'towards' for the allative, paralleling -č'ən 'from' for the ablative.

Various other postpositions and suffixes are used in specific languages and language groups.

4.2. Demonstrative and derivational prefixes

A hallmark of the Athabaskan directional system is that directional adverbs must be prefixed except where they function as preverbs. The set of possible prefixes varies from language to language: in Hupa, the only member is *yə-*; other languages have seven or so prefixes. These prefixes are of two main types: demonstrative prefixes and derivational prefixes.

Demonstrative prefixes indicate distance from the speaker or point of reference. These are historically demonstrative stems that have lost independent status and become part of the following directional. Tentative reconstructions of these prefixes are

*(?)*yə-* 'neutral': Koyukon *ʔa(y)-*; Tanaina *ʔəy-*; Hupa *yə-*

**ŋə-* 'neutral': Ingalik *ŋ(ə)-*; Han, Carrier *n-*; Hare *h̥j-~he-*

**da-* 'nearby': Koyukon, Minto *do-*; Ahtna *da-*; Tanaina *du-*; Hare, Slave *d̥h-* 'near (immediate)' and Slave *dúh-*, Hare *žúh-* 'near (approximate)'; Carrier *da-*

**na-* 'not distant': Koyukon, Minto *no-*; Ahtna *na-*; Tanaina *nu-*

*(?)*əqu-* 'not distant': Hare *ʔekúh-~ʔegúh-*; Navajo *kó-* 'here', *ʔákó-* 'there'

**ya-* 'distant': Minto *yo-*; Tanaina *yu-*; Kutchin *ye-*; Hare *yah-*

**yu-* or **ʔu-* 'distant' or 'neutral': Koyukon *yu-* 'distant'; Carrier *yú-* 'distant'; Kutchin *ʔo-* 'neutral'; Slave *yu-~ʔu-* 'neutral'; Chipewyan *yü-* 'neutral'; possibly also Sarcee *wú-* (*yú-*) and Navajo *γó-~xó-* 'neutral'¹⁴

The different prefixes given for 'neutral', 'not distant' and 'distant' are in complementary distribution. Perhaps some of the prefixes listed above were originally compound prefixes. For example, the PA stem for 'this' or 'here' appears to have

been *də-; the prefix *da- reconstructible from Koyukon, Minto, Ahtna, Tanaina and Carrier may be from *də-γə- or the like,¹⁵ and the Slave doublet dīh- (immediate) and dúh- (approximate) may reflect *də- followed by different prefixes. Similarly, *(ʔə)yə- is a demonstrative and anaphoric pronoun apparently meaning 'that' or 'there' (referent understood), also the source of the "fourth person" object prefix *yə-.¹⁶ The prefix *ya- 'distant' may be from a compound prefix like *da-, i.e. *(ʔə)yə-γə- or the like. The prefix *γə- postulated here may be related to that found in the demonstrative stem *nəγə- 'not distant', not attested without the *γə-. The prefix *yu- 'distant', found as a demonstrative stem in some languages, might also be related to *(ʔə)yə-. Carrier also has ʔəde- 'farthest', possibly a prefixed form of ʔədən 'elsewhere'.

Particularly interesting is *ŋə-, whose reflexes are similar to those of the conjunct verb prefixes of the same form, i.e. the neuter imperfective and second person singular prefixes (see Krauss and Leer 1981:40-48). In particular, these prefixes have the form ŋ(ə)- in Ingalik and n- in Carrier. The Hare neutral demonstrative prefix hɨ- appears to be formed with the "peg" prefix he- plus the reflex of this *ŋə-; the alternate form he- without the nasal is puzzling.

The following prefix, though apparently not a demonstrative by origin, can be grouped with the demonstrative prefixes:

*c'i- 'straight (in the indicated direction)': Koyukon ǎ'i-; Ingalik ê'e-; Tanaina, ahtna c'i-; Kutchin k'i-; Sarcee c'í- (?)

At an early formative stage of Athabaskan, as in Tlingit, I postulate that the directional stem was lexically a noun that could be preceded by a demonstrative and to which postpositions were added to form adverbial phrases. Compare

the following sentences, both translating roughly 'he walked way up there':

- (52) Tlingit: yú dá-g-i kè ʔuwagúd
yonder upland-LOC up he.walked

- (53) Koyukon: yu-dəg-ə xo-lyo
yonder-above-ALL up-he.walked

In Tlingit, yú dá-g 'yonder upland' is a NP just like yú ʔàn 'yonder town'; the addition of the postposition -i to this NP in (52) results in an adverbial phrase. This is exactly what I wish to claim was originally true in Athabaskan.

This analysis, however, does not hold for Eyak, where demonstratives can precede directional postpositions, but in Eyak they function as the object of the postposition, not as modifier. The following Eyak sentence, for example, translates 'he walked (toward) above it', not 'he walked up there':

- (54) Eyak: ʔəw-dəg-əč' sahłih
that/there-above-ALL he.walked

4.3. Directional postpositions

In most languages postpositions indicating direction relative to the object of the postposition may also be formed from directional stems. In the northwestern Athabaskan languages, such postpositions are formed by adding a derivational prefix to the directional stem. In the Alaskan Athabaskan languages, this prefix can be reconstructed as

*-yə-: Tanaina γ- (with areal possessor qə-yə-), Ahtna -ya- (with areal possessor q-a-), Koyukon -yə-, Kutchin -eh-.

Carrier (Morice) -on- (with areal possessor hw-an-) may also be cognate with these prefixes, but the nasal in the Carrier prefix is puzzling. With the areal possessor, the above prefixes translate 'farther, farthest', as does Koyukon k'ə-ʔu- (apparently indefinite non-human object plus areal prefix).¹⁷ In Slave and other Eastern Canadian languages, this prefix is zero; that is, the unprefixd directional can take an object; compare Koyukon ʔa-dəɢə '(toward) above', sə-ɣə-dəɢə '(toward) above me' and Hare yah-dee 'above', se-dee 'above me'. The same may formerly have been true for Hupa; Golla (1960:250) notes -daɢə 'upslope of' alongside yədaɢə 'upslope'. For this reason, Rice (1983:278) proposes an analysis of Hare and Slave directionals where the directional stems are treated as postpositions and the demonstrative prefixes as their objects.¹⁸

4.4. Directional preverbs

Allative directional adverbs also occur without prefix as preverbs. All of them can be used in some languages such as Koyukon and Carrier; in other languages, only certain ones occur as preverbs. Some common incorporated adverbs are also directionals by origin, e.g.

*dəɣ (s-neuter) '(located) on top'

*yəɣ (ɣ-momentaneous) 'into house'

*ŋa.nʔ > *ŋǎ.# (n-momentaneous) 'across'

*ʔa.nʔ > *ʔǎ.# 'home, into dwelling'

*dəɣ is a punctual locative with *-d; the last two and possibly also *yəɣ are unsuffixed.¹⁹

We will now illustrate Athabaskan directionals with data from Koyukon, Carrier, Chipewyan, Hupa and Navajo, whose demonstrative systems are among the best documented;

these languages fairly well illustrate the variety found in Athabaskan directional systems. We will also discuss briefly the directional system—or rather the lack of one—in Sarcee. The Ahtna system is covered in Kari 1985 and will not be given here, the system being virtually identical with that of Koyukon.

4.5. Koyukon

Koyukon alone among the languages surveyed here has a full set of areal locative forms. Note the labialization of full vowels to *u* and reduced vowels to *ʊ* in these forms. The areal locative forms *-dəɣʊ*, *-yəɣʊ* and *-nəɣʊ* have apparently lost the final syllable *-ɣə* seen in *-nəɬʊɣə* < **-nəɬə-ɣʷə*. The suffixed stem occurs with *-c'ə(nʔ)* 'from' and *-c'ən(ə)* 'part of area or enclosure, side'. The following prefixes occur: *ʔa(y)-* 'in sight (distance indeterminate)', *do-* 'nearby', *no-* 'intermediate', *yu-* 'distant', *ʔi-* 'straight', *-ɣə-* 'farther than', *k'ə-ɬʊ-* 'farther, farthest'.

4.6. Carrier

The Carrier locative forms reflect the PA punctual locative; note that Morice's final *o* < **əɣ* < **əɥ* and *oh* < **əɬ*. The form *-ʔahʷ* (transcribed by Morice as *-auh*) '[away, off, yonder] round about' appears to be a unique relic areal locative form. The suffix *-z~-s* on the ablative forms is the reflex of PA **-č'ən* 'from'. Morice also gives the productive suffixes *-ənʔa* 'in a way --' and *-hʷoya* 'passing in a way --', which appear to form adverbs of manner; these are added to the allative form. The following prefixes occur: *n-* 'neutral', *da-* 'nearby',

yú- 'far away', c'ih- 'in a straight line', -an- 'farther than',
 ʔon- 'farther', ʔəde- 'the farthest'.

The directionals -nuʔ and -niʔ, as noted in section 4, may preserve a distinction lost elsewhere in Athabaskan, or may be a case of specialization of what were originally non-contrastive stem alternants of *niʔ. Note also the semantic specialization of -no 'north' and its Chipewyan cognate -naya 'south', both from *nəgə 'upland'.

4.7. Chipewyan²⁰

As much of the Chipewyan directional system as can be gleaned from Li's stem list is given in Chart 7. The Chipewyan locative forms reflect the PA allative, and the Chipewyan allative forms have a high-toned suffix that reflects *-əʔ, apparently not found outside the Eastern Canadian Athabaskan language area. The attested suffixes are -sɨ̃-zɨ̃ 'toward' and -sɨ̃-zɨ̃ 'from'; there may be others. The only prefix attested is yu- 'neutral'; unprefixated forms are also attested. As in Hare and Slave, at least some of these occur as postpositions.

4.8. Hupa²¹

The Hupa locative forms reflect the PA allative. Suffixed forms occur with the postpositions -č'ənʔ 'toward' and -č'ən ' (hither) from'. The only demonstrative prefix is yə- 'neutral'. Hupa directionals may be placed in apposition to form compound directionals, e.g. yənəgə-yəceʔnə 'upstream on this bank and downhill, towards the river; compass S'. The *across* directional presents a phonological problem: -manə lacks the

glottal stop posited for PA, in contrast with $-ceʔnə$ (< $*cənʔ-ə$), which retains it. The reason for this is unclear to me. Furthermore, the suffixed stem form of this directional, $-ʔan-$, appears to be suppletive; it must be from PA $*ʔanʔ > *ʔā-$ 'off to the side; away'.

4.9. Navajo

The Navajo locative forms $-dàh$ and $-yàh$ reflect the PA punctual locative. The demonstrative prefixes are $γò- \sim xò-$ (with locative forms), $gó-$ (with allative forms), both 'neutral', $kó-$ 'here' and $ʔákó-$ 'there'. The element $kó-$ can be compared with Hare $kúh-$, and $ʔá-$ is a prefixed form of $ʔá$ 'there'. The prefix $γó-$ is perhaps cognate with Sarcee $γú-$; the variant $xó-$ perhaps attributable to contamination from the areal prefix. The unprefixed forms $dàh$ '(starting) off, (holding) static', $dè(g)$ 'up', $yàh$ 'in(side)', $yà$ 'down', $nà$ 'across, crosswise on' occur as preverbs, as well as $ná's$ 'forward, farther on'.²²

Hupa and Navajo provide nicely contrasting examples of reduction of the directional system. In Hupa, all the directionals are waterway-oriented, whereas in Navajo, none are. Hupa also has an interesting shift in the directional system compared with the rest of the systems illustrated here: $-nəə$ is not 'upland (away from stream)' but 'upstream', replacing $*niʔ$, and $-dəə$ is not 'up vertically' but 'upland', replacing $*nəə$. But from a historical viewpoint, this may not be so much a "shift" as a reflection of an ancient variability of reference; compare Eyak $dəə$ 'above, upland' and $-ləə$ 'upland from, upstream from'. Although Navajo has two directionals which refer to waterway orientation in Northern Athabaskan, neither specifically does in Navajo: $-nèʔ$ means 'behind' and

not 'upstream', and -nà 'across' is not specifically 'across the water'.

4.10. Sarcee

Finally, Sarcee provides a third example of reduction of the directional system, in this case, to the point where it is no longer a system. A few directionals are attested in Sarcee, but on the basis of the existing information it appears impossible to piece together a system, if there is one. I could find no reference to such a system in Cook 1984. The best-attested directional is wúnì? 'behind, toward the rear (of a house or tent)', which also forms the basis of the words for 'north' (Sapir wúnì-t'ó-sì) and 'south' (Sapir wúnì-gâ-k'à-sì?), where the postbase -sì? is comparable with Chipewyan -sî 'toward'. another probable demonstrative is found in Young's notes: wónaastinah (basic form apparently wúnó?) 'across'; and in Sapir's texts we find wúsì-sì? 'forward', whose stem (the second syllable) may be the reflex of *cən? 'downland (toward bank)'. all these have the prefix wú- (/yú-/), apparently cognate with Navajo yó- and possibly also Slave yu-~ʔu- and Chipewyan yų- 'neutral'. Another possible example occurs in Sapir's texts: c'ídīgà 'upright', apparently from PA *c'i-dəgə 'straight upward'. from these examples, it would appear that Sarcee, like Navajo, has no waterway-oriented directionals. It is hardly surprising that the Apachean group and the Sarcees should have lost the waterway-oriented directionals when they gave up their canoes.

5. Comparison of Na-Dene directionals

Possible cognate sets among the Na-Dene directionals are given in Chart 10. Note that there are no exclusively waterway-oriented directionals which can be reconstructed for all three branches. The oppositions *up* vs. *down* (Tlingit *upland* vs. *downland*) and *behind* vs. *ahead* (Tlingit *upstream* vs. *downstream*) can be seen in all three branches; Athabaskan-Eyak also shares *upland* vs. *downland*, which in Tlingit is supplied by the pair cognate with Athabaskan-Eyak *up* vs. *down*. In the *Eyak Dictionary*, Krauss lists -cɨʔ and -ciyaʔ as subentries under the stem -cɨʔ 'head', thus implying a synchronic and genetic relationship; this implies that Athabaskan *-ciʔ 'head' is likewise related to *cənʔ. Tlingit *up* and *down* are not clearly relatable to Athabaskan-Eyak, although (di-)ɣíʔ 'below' (preverb ɣèʔ 'down; aboard') may be ultimately related with ʔíʔ 'down toward shore' (preverb ɣèʔ; the Koyukon doublet ɣəcə 'down' and ɣəx 'inside' comes to mind as a parallel). If one looks only at the Athabaskan-Eyak evidence, Koyukon ɣəcə looks like an innovation formed by analogy with dəcə. Tlingit ʔíʔ (ɣèʔ) may also be an innovation in Tlingit formed by analogy with dáʔ. These two forms may, however, be truly cognate. Note also the loss of ɣ in Tlingit in all but the preverb forms (see also Krauss and Leer 1981:152).

The Tlingit cognate given for Pre-PA *nəsd, Eyak lahɣ requires some comment. First, Tlingit ʔíx (ʔíx-), if cognate, may parallel Eyak ʔɨz-iʔ, where initial l (< *n) is absorbed leaving a nasal vowel, perhaps by analogy with possessed forms where l was intervocalic. If so, the nasalization was lost in Tlingit, which has no nasalized vowels (but may earlier have had them). (Compare also the loss of ɣ in ʔíʔ.) Second, there are a few other possible cognate sets such as Tlingit t'íx'

and Eyak t'ic' 'ice' (also, as verb stems, Tlingit -t'ix' and Eyak -t'ic' 'to freeze' where the Tlingit g-series appears to correspond with the Athabaskan-Eyak ʒ-series). Third, if Eyak ʒ is original, it is spirantized in the suffixed form -lahs-d and Athabaskan *nəsd, and so apparently also in Tlingit ʔíx.

The opposition *upstream* vs. *downstream* cannot be reconstructed for Na-Dene. *Upstream* is supplied in Athabaskan by the stem for *behind* and in Tlingit by its cognate; in Eyak, both *up* and *up from shore* are also *upstream*. Athabaskan *downstream* is apparently cognate with Eyak -daʔ 'in front' (which does not appear to be a directional), and with the Athabaskan anatomical noun *-daʔ 'lips, outside of mouth' and disjunct verbal prefix *daʔ > *dã# 'toward entrance'; Eyak *downstream* is also *behind* and Tlingit *downstream* appears to be cognate with Athabaskan-Eyak *ahead*. Tlingit yán 'ashore' is cognate with PA *gənʔ 'land', an ordinary noun (see Krauss and Leer 1981:15, 152).

This evidence seems to indicate that the waterway-oriented directionals so prominent in all three branches of Na-Dene are semantically secondary, except perhaps for *up from water/shore* vs. *down toward water/shore*, which Athabaskan and Eyak share. The Tlingit and Athabaskan directionals for *upstream* vs. *downstream* seem to indicate that *upstream* was equivalent with *behind* and *downstream* with *ahead* or *in front*, a logical enough connection if one considers a river to flow "ahead." Furthermore, as we have seen, directional terms also reflect the demonstrable fact that houses tend to face the waterway. The very fact that all three branches of Na-Dene have special verb stems for traveling by boat provides support for the idea that this people depended on waterways, but the directional system offers no evidence whether this waterway was marine, riverine or both.

6. Evidence relating sibling terms with directionals in Tlingit and Eyak

In his paper on the Athabaskan and Eyak kinship system Krauss (1977:34-35) notes the interesting fact that three of the Eyak sibling terms are based on directional stems, namely -Y·z-kih 'woman's brother', related to lahz 'ahead' (variant ?i·z-i?), -ca?-kih 'woman's older sister', related to ca?, the non-suffixed preverbal form of -ci·? ~-ciya? 'down toward shore' (both ending with the diminutive suffix -kih), and -dæce? 'younger sibling', related to dæg 'up(land)'. Tlingit similarly has three sibling terms ending with the diminutive suffix -k', which on close inspection all appear to be somehow related to these Eyak sibling terms. The connection between these terms and the directional stems is, however, not at all obvious in Tlingit, and would have escaped detection were it not for the more transparent Eyak terms. The three Tlingit terms are ?í·k' 'woman's brother', λà·k' 'man's sister', and kî·k' 'younger sibling of same sex'.

Just as Eyak -Y·z-kih is related to lahz 'ahead, out to sea', Tlingit ?í·k' can quite plausibly be compared with ?í·x 'downriver', with deletion of x before -k'. These Tlingit and Eyak directionals, as seen above, appear to be cognate; both terms have the diminutive suffix; and they both mean 'woman's brother'.

In the same way, Tlingit λà·k' may preserve an obsolete directional stem cognate with Eyak ca?. This comparison requires some comment. First, we have a healthy number of cognate sets (data unpublished) where the Tlingit λ-series corresponds with the Athabaskan-Eyak z-series. Furthermore, in my unpublished paper "Internal Variability in the Tlingit Lexicon" (Leer 1985), I give a substantial number of doublets in the Tlingit lexicon illustrating variability between stem-

initial plain and aspirated stops within Tlingit. On this basis, it is possible to compare Tlingit $\lambda\hat{a}$ - and Eyak $ca^?$ -; this comparison is strengthened by the similar case of Tlingit $\lambda\hat{i}\text{ʔ}$, Eyak $-ce^?$ and Athabaskan $*-c\acute{a}\eta^?$ 'flesh' (see Krauss-Leer 1981:154, note 39). Here again, both Eyak and Tlingit kin terms have the diminutive suffix, and the meanings $\lambda\hat{a}k'$ 'man's sister', $-ca^?kih$ 'woman's older sister' are comparable.

These two Tlingit terms, $\text{ʔ}\acute{i}k'$ 'woman's brother' and $\lambda\hat{a}k'$ 'man's sister' are also suspiciously similar to the parent terms $\text{ʔ}\acute{i}\acute{s}$ 'father' (vocative $\text{ʔ}\acute{i}\acute{s}$) and $\acute{x}\hat{a}$ 'mother' (vocative $\text{ʔ}\acute{a}\acute{x}\acute{i}\sim\text{ʔ}\acute{a}\acute{x}\acute{e}$). These sibling terms may originally have been diminutives of the parent terms; if so, subsequent phonological changes have obscured the relationship. As I demonstrate in the paper on internal variability, some of the variability involved in the Tlingit doublets can be ascribed to sound symbolism, and kin terms are a natural breeding ground for sound symbolism. Thus we might compare $\text{ʔ}\acute{i}x$ 'downstream' with $\text{ʔ}\acute{i}\acute{s}$ 'father' as well as $\text{ʔ}\acute{i}k'$ 'woman's brother'; in my paper I note a number of instances where doublets in which the \acute{z} -series alternates with another series (usually the λ - and \acute{z} -series, but also the g -series), and where variant with \acute{z} -series has a kind of pejorative connotation. It might seem strange that 'father' should be so modified, but Krauss notes that $-\acute{s}iyah\sim-\acute{s}ah$, normally a pejorative suffix, is frequently used with Eyak kin terms as "an affectionate or meaningless suffix" (Krauss 1977:17). Furthermore, Tlingit $\acute{x}\hat{a}$ 'mother' is a perfect match with Eyak $ca^?$ -; one might conjecture that the deaspiration in $\lambda\hat{a}k'$ 'man's sister' was also a symbolic process.

The third sibling term is Tlingit $k\acute{i}k'$ 'younger sibling of same sex', which like Eyak $-d\acute{a}ce^?$ 'younger sibling' appears

to be derived from the *up* directional, dəɕ in Eyak and (di-)kí in Tlingit. Here the directionals are not cognates but semantically (near) equivalents. Curiously, -dəɕe? 'younger sibling' lacks the diminutive suffix (as does as -xəwəx 'man's older brother', but not -caʔkih 'woman's older sister'); in Tlingit it is the terms for older siblings of the same sex that lack the diminutive suffix.

There remains the question of why these particular directionals were chosen to represent the relationship between siblings. It is possible that these reflect - or formerly reflected -traditional seating arrangements in houses. In Koyukon, the terms yuʔidəN 'primary wife' and yungədəN 'secondary wife' are literally 'the one toward the entrance (toward the river)' and 'the one toward the back (away from the river)'; the stem of the first of these, (ʔən? > *cən? 'down toward shore', is cognate with that suggested here as the source of Eyak -caʔ-kih 'woman's older sister' and Tlingit ʔâ 'mother' and ʔàk' 'man's sister'. According to Eliza Jones (p.c.), the husband had his place between these two wives on the side of the wall—in some villages on the upriver side and in others on the downriver side. Young children stayed in the rear. In the case of these Eyak and Tlingit sibling and parent terms, however, the choice of directional stems is puzzling.

Notes

1. Rice (1983, pp. 274-287) uses the term 'deictics' to refer to both directionals and demonstratives. The demonstrative systems are not included in the present discussion. In Athabaskan (but not in Tlingit or Eyak) the demonstrative and directional systems are closely related and so could be considered subsets of a single system.

2. Terms for wind direction are not necessarily part of the directional system. In Tlingit and Eyak, for instance, some wind names are not related to directionals (Tlingit *xú·n*, Eyak *ṣá·* 'north'; Tlingit *ɬ'acakáṣ*, Eyak *sida?* 'west') while others are based on directional stems (Tlingit *sánáṣè·d*, Eyak *ʔi·zi?ṣ* 'south').
3. I use here a hybrid system of tone marking which indicates the tone for all dialects of Tlingit:

<i>Marking</i>	<i>Tongass</i>	<i>Sanya-Henya (Southern)</i>	<i>Northern</i>
·	v·	·	·
·	v?	·	·
·	v`	·	·
·	v	·	·
v	v	·	·
·	v	·	·

Note also that the symbol *ɣ* represents *ɯ*, i.e. an unrounded high back semivowel, whose rounded counterpart is *w*.

4. In the contemporary language *di-* is usual with *dikí·* 'above' and *diyí·* 'below' but extremely rare with *kínde* 'upward' and *ɣínde* 'downward'. It is also possible to use (di)kí·de in place of the usual *kínde*.
5. In Tlingit, *e > a* is a regular morphological rule for prefixes and pre-head elements in compounds; cf. *ʔax ɣ'é* 'my mouth' and *ʔax ɣ'a-dà·* 'the area around my mouth; my lips', where *dà·* 'periphery' is the head of the compound. Note also that *N₁* loses the high-tone marking

in Northern Tlingit; this is also characteristic of pre-head elements in compounds.

6. The term 'preverb' refers to an adverb that has been drawn into the verb complex so that it either must immediately precede the verb or has been incorporated into the verb. This term is most useful in Tlingit and Eyak, where preverbs are regarded as separate words proclitic to the verb; in Athabaskan, however, most of these are incorporated into the verb and thus called disjunct prefixes.

7. Although a treatment of aspect and superaspect is outside the bounds of this paper, we may note that the question of aspect in Tlingit, as in Eyak and Athabaskan, is quite complex. Here I use the term "aspect" to refer to a fourfold contrast in Tlingit verbs best seen in verb forms such as the imperative, where each aspect is characterized by one of the prefixes Ø-, na-, ga-, ga-. Thus Ø-aspect verbs are characterized by a null prefix in the imperative. The aspect of the verb may be assigned by the verb theme or by an aspectual derivational string; the directional preverbs discussed here are thus aspectual derivational strings. The progressive superaspect requires that the verb word be preceded by one of the directional preverbs. If no directional preverb is assigned to the verb by an aspectual derivational string, the progressive takes *yè* for ga-aspect verbs, *kè* for ga-aspect verbs, and otherwise *yà*; thus *yà* can be said to be the default preverb for the progressive superaspect. The progressive superaspect also requires either the prefix na- (in the progressive imperfective) or ga- (in other forms of the progressive, e.g. the imperative). There are various subtypes of the customary superaspect, all of which take na- where the progressive takes ga-.

8. The Eyak directionals do not form such a clearcut system as those of Tlingit and Athabaskan. It is difficult to establish lexical criteria for this category. For example, not all stems that could be considered directionals occur both as postpositions and preverbs, and not all of them occur with the prefixes xə- and/or -gəʔ- .
9. What I call 'final postpositional suffix' here is treated by Krauss as the final member of a compound postposition. For example, both -dəg 'up(land)' and -d 'at rest' are postpositions, and the combination of the two is also a postposition. The final postpositional suffixes correspond functionally to Tlingit postpositions; like case endings, they typically encode relationships that could be characterized as thematic roles.
10. Krauss suggests a connection between -u- and the demonstrative stem ʔəw 'that/there'; the allomorph (or morpheme) -u- occurs only in these forms.
11. It seems likely that the Ingalik initial was originally the 'neutral' demonstrative prefix ŋ(ə)- , after which the original stem-initial *n was dropped: $\text{*ŋ-nəθə} > \text{ŋəθə}$. This form was then reinterpreted as the stem. The fact that PA *s is not voiced intervocalically indicates that it was originally the initial member of an obstruent cluster (i.e. it was not intervocalic in pre-PA). There is no evidence within Athabaskan to indicate what the second member of the cluster was, but the Eyak cognate -lahz 'ahead' has the allomorph -lahs- before the suffix -d , which is lexicalized as part of the stem in the derivative xə-lahsd 'out to sea, south' (not *xə-lahz). This lexicalized -d was very probably the second member of the obstruent cluster in Pre-PA.

12. One possible explanation is that variants with the u vowel are back-formations from the areal locative with suffixed $*-\gamma w\bar{a}$, which in Alaskan Athabaskan languages causes a preceding full vowel to be rounded to $*u$; the Koyukon areal locative form of this directional is $nu\gamma\bar{a}$. Carrier also preserves the areal locative form $-ʔahw$ 'away, off, yonder (round about)', and it is conceivable that $-niʔ$ had an areal locative form $*-nihw > *-nuh$ from which $-nuʔ$ arose by back-formation.
13. In the Interior Alaskan group of Athabaskan languages as well as Ingalik and Tanaina, if the directional stem ends with an obstruent, the punctual and areal locative suffixes are added to the allative form with $*-\bar{a}$. In these languages the punctual locative suffix is always overtly present. Thus in Koyukon, for example, we find $-d\bar{a}c\bar{a}-d$ 'above (LOC)' in place of the expected $*-d\bar{a}\bar{x}$. See Chart 5 for further examples.
14. Sources: Koyukon: Jones and Kari 1981; Ingalik, Tanaina: Kari (p.c.); Minto: Krauss (p.c.); Ahtna: Kari 1985; Han: Ruth Ridley (p.c.); Kutchin: Katherine Peters (p.c.); Carrier: Morice 1932; Hare, Slave: Rice 1983; Chipewyan: Li 1933; Sarcee: Sapir 1922 and Young 1950; Navajo: Young 1980; Hupa: Golla 1960.
15. The following phonological rule in PA operated where a conjunct verb prefix $*C\bar{a}-$ was followed by the aspectual prefix $*\gamma\bar{a}-$ when the latter prefix immediately preceded the stem or classifier: $*\bar{a}-\gamma\bar{a}- > *a-$. This rule could also have operated in other prefix strings of the same shape.
16. Golla notes this fact in connection with the Hupa demonstrative prefix $\gamma\bar{a}-$, which he observes was "...either

an archaic general object marker...or an old demonstrative stem..." (1960:250).

17. This morpheme *γə- and that of the same form posited in the reconstruction of *da- (< *də-γə-?) and *ya- (< *(?ə)yə-γə-?), and possibly that of *na- < *nəγə- (< *nə-γə-?) as well, would be a reflex of Pre-PA *ɬə- (with *ɬ voiced intervocally in PA). This looks suspiciously like the Eyak areal prefix ɬə- that is added to directional postpositions to form adverbs or nouns of area. It could be that this *ɬə- was originally added to directionals also in Athabaskan, but became fused with the demonstrative prefix due to the contraction *ə-γə- > *a-. If this comparison is valid, however, the original function of this prefix is unclear. Eyak ɬə- changes a postposition into an adverb; in Krauss's view, it functions as the object of the postposition. Athabaskan *-γə-, on the other hand, changes the stem of the demonstrative adverb into a postposition.
18. Rice labels the demonstrative prefixes 'deictic nouns' (1983:274) or 'locative nouns' (1983:275 ff.).
19. In Tlingit, Eyak, (as apparently also in Pre-PA), the postposition -d marks a complement of location with a positional verb such as 'sit'; compare Tlingit ʔád ʔá, Eyak ʔəw-d sədahłjɬ, Koyukon ʔiyə-d lədo, all of which translate 'she's sitting there'. In Athabaskan, however, this *-d was regularly deleted as the second member of an obstruent cluster and consequently lost as a productive nominal postposition, and now survives only in the demonstrative and directional systems in some languages.

20. Li's glosses for the individual forms are here conflated in order to accommodate the chart.
21. I use the symbol ə here in place of Golla's ɯ.
22. Kari (forthcoming, section 4) also points out the interesting case of -nání·(d) 'on the edge, on the slope', which he relates to Ahtna nani·t < PA *na·-ní·d 'upstream (not distant)'. There remains, however, the question of why the Navajo form is a postposition; directionals with demonstrative prefixes never take objects elsewhere. Perhaps the prefix -ná- has a different source.

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Chart 1
Schematic Representation of Na-Dene
Waterway-oriented Directionals

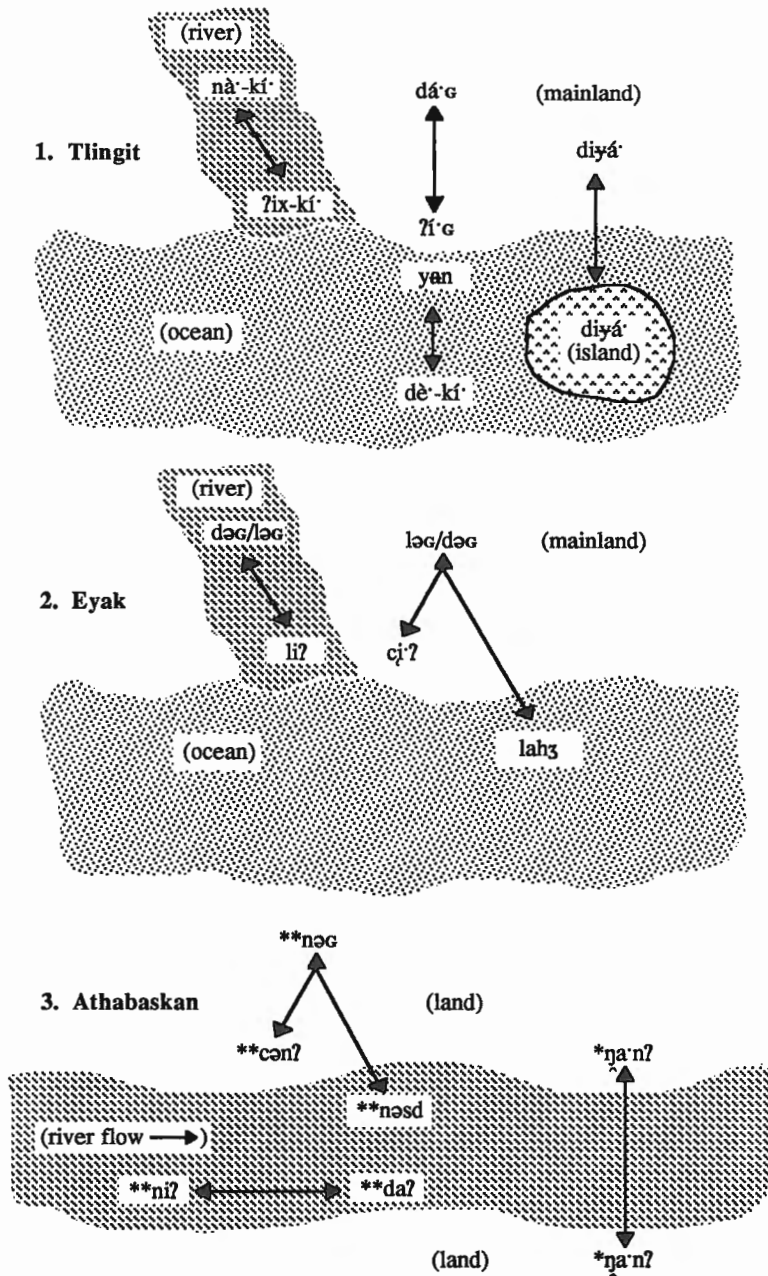


Chart 2
Tlingit Directionals

	Noun	with -de	with -nà·	Preverb
up above	(di-)kí·	(di-)kín-de	(di-)kì· -nà·	kè· ~ ké·
down below	(di-)yí·	(di-)yín-de	(di-)yì· -nà·	yè· ~ yé·, yà·
upstream, north	nà·kí·	nán-de	nà·-nyà·, nà·-nà·	—
downstream, south	?ix-kí·, ?í·x	?ix-de	?ixi-nà·	—
up from shore (beach), interior, back away from open	dá·g	dác-de	dagi-nà·	dà·g
down toward shore (beach)	?í·g	?íg-de	?igi-nà·	yè·g, ?í·g
ashore	yán	yán-de	—	yan
out to sea, out into open	dè·kí	dág-de	dagi-nà·, digi-nà·	dà·g
across, on the other side (of water)	diyá·	diyá·-de	—	yan
inside	nè·t	nè·t-de	—	nè·t
outside	gán	gán-de	—	—
back	—	qúx-de	—	qux
aground, into shallow water (Interior Tlingit only)	—	kúx-de	—	kux

Chart 3
Eyak Directionals

	Postposition	Preverb	with -eʔ-x
(pp.) above, upland (prev.) up river, bay, inlet	-dəg	dəg	dəg-eʔ-x
(pp.) under, beneath (prev.) downward	-yəx	yəx	—
upland (from water or shore), toward back of house; (pp. also) up river, bay, inlet	-ləg	ləg	ləg-eʔ-x
behind, back, deeper inside; down river, bay, inlet	-liʔ	liʔ	liʔ-x
downland (toward water or shore)	-ciʔ, -ciyaʔ	caʔ	ceʔx
forward, out to sea, south	-lahʒ	—	—

Chart 4
Athabaskan Directionals

	PPA stem	PA allative	PA punctual
up above		*(-ə)	*-d
down below	**dəG-	*dəG-ə	*dəx
upstream, back behind, to the rear	**ni?-	*ni?	*ni'-d
downstream	**da?-	*da?	*da'-d
up from shore, up on or above shore (from water), toward back (of house)	**nəG-	*nəG-ə	*nəx
down to shore, toward front (of house)	**cən?-	*cən?	*cɛ'-d
ahead, out on open water	**nəsɗ-	*nəs-ə	*nəs
across, on the other side (of the water)	**ŋa'n?-	*ŋa'n?	*ŋa'-d
off to the side, away	**ʔən?-	*ʔən?	*ʔa'-d

Chart 5
Koyukon Directionals
(from Jones-Kari)

	Allative	Punctual	Areal	Suffixed
up above	-dəgə	-dəgəd	-dəgu	-dəx-
down below	-yəgə	-yəgəd	-yəgu	-yəx-
upstream, back behind, to the rear	-na'ə, nuʔu	-nid	-nuyə	-ni-
downstream	-do'α	-dod	-duyə	-do-
up from shore, up on or above shore (from water), toward back (of house)	-nəgə-	-nəgəd	-nəgu	-nəx-
down to shore, toward front (of house)	-ləne	-lid	-luyə	-li-
ahead, out on open water	-nəʔə	-nəʔəd	-nəʔuyə	-nəʔə-
across, on the other side (of the water)	-nanə	-nod	—	-no-
off to the side, away	-ʔəne	-ʔod, -ʔud	-ʔuyə	-ʔo-

Chart 6
Carrier Directionals
(from Morice 1932:200-203)

	Allative	Locative	Ablative (with suffixed -z -- -s)
up above, over	-do	-doh	-dəs
down, underneath	-yo	-yoh	-yəs
upstream, away up (from the outlet of a lake)	-nuʔ	-nud	-nuz
downstream, (the opposite of nuʔ)	-daʔ	-dad	-daz
north	-no	-noh	-nəs
down towards a body of water	-cən	-cid	-ciz
forward	-nəs	-nəs	—
behind, in the rear; also: away from a body of water	-niʔ	-nid	-niz
on the opposite side (of the water)	-yan	-yad	-yaz
away, off, yonder	-ʔən	-ʔad	-ʔaz

Chart 7
Chipewyan Directionals
(from Li 1933)

	Locative	Allative	Suffixed
up, above, upriver or uphill	-dàyà	-dàyá	-dà-
down, below	-yàyà	-yàyá	[-yà-]
downriver	-dá	-dá	-dá
south	[-nàyà]	-nàyá	-nà-
north, out on lake, outside	-θí	-θé	-θí-
ahead, in front	-nàθè -nèθè	-nàθé -nèθé	? ?
back, behind	-ní	-ní	[-ní-]
across	-ná [-nâ]	?	-nâ
off on one side, at a distance	-ʔâ	-ʔâné	-ʔâ-

Chart 8
Hupa Directionals
 (from Golla 1960:250-253)

	Locative	Suffixed
upstream (SE)	-nαgə	-nah-
downstream (NW)	-deʔ	-da-
away from the stream, uphill (NE)	-dαgə	-dah-
towards the stream, downhill (SW)	-ceʔnə	-sən-
across the stream (SW)	-manə	-ʔan-

Chart 9
Navajo Directionals
 (from Young and Morgan 1980:37-44)

	Locative	Suffixed
up	-dàh	-dè, -dèg
down	-yàh	-yà·
behind	-nè'	-nè'
across, crosswise	-nà·	-nà·
beyond, on the other side	-ʔà·	-ʔà·

Chart 10
Athabaskan, Eyak, and Tlingit Cognate Sets

PPA	Eyak	Tlingit
**dəG 'up'	dəG 'up, upland; upstream'	dá·G 'upland'
**yəX 'down'	yəX 'down'	ʔí·G 'downland'
**nəG 'upland'	ləG 'upland'	—
**cən? 'downland'	cǝ·? ~ 'downland'	—
**ni? 'behind, upstream'	li? 'behind, deep inside, downstream'	nà·-kí· 'upstream, north'
**ləsd 'ahead, out on open water'	lah3 'forward, out to sea, south'	ʔí·x, ʔix·kí· 'downstream, south'
**ŋa·n? 'on other side (of water)'	—	di·yá· 'on other side (of water)'

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